

# **Zero-sum game?**

## The human dimensions of emissions trading

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## Summary

Climate change has been described by Prime Minister Kevin Rudd as the 'great moral challenge of our time'. While the sentiment is admirable, the Rudd Government's chief instrument for tackling climate change, the Carbon Pollution Reduction Scheme (CPRS), will actually erode the moral imperative for people to take steps to reduce their own climate impact. Because of the way the CPRS is designed, individual action to reduce energy use will have no effect on the level of Australia's greenhouse gas emissions.

The assumption behind the government's climate-change policy is that such a complex issue can be addressed via one simple instrument. The CPRS relies on changes in *price*, to the exclusion of all other factors, to bring about changes in behaviour. But while price is important, it is by no means the only determinant of behaviour. Just as critical is the intrinsic urge to act in one way rather than another due to habit, personality or even the desire to 'make a difference'. This paper seeks to demonstrate how, in the realm of climate change, price-motivated behaviour and intrinsically-motivated behaviour need not be incompatible.

Economic theory assumes that people's behaviour is invariably based on self-interest. This analytical framework, which relies on the notion of the 'rational agent' (otherwise known as *homo economicus*), cannot properly account for altruistic behaviour. Although the rational agent may appear to act selflessly at times, orthodox economic theory suggests that such actions are simply attempts to win personal advantage through the esteem of others. While this model accurately describes the way some companies (and even some individuals) act, it does not accord with the behaviour of most people. For example, it provides no meaningful explanation for anonymous donations to charity.

For the past 15 years, countries like Australia have relied almost exclusively on the intrinsic motivation of concerned people to help reduce greenhouse gas emissions. This has led to better community awareness of the need to conserve energy and increased demand for environmentally-friendly products. As a comprehensive response to climate change, this 'voluntary' approach based on altruism and good intentions is fundamentally inadequate. Yet the community's willingness to make voluntary contributions should not be nullified by policies like the CPRS, which will prevent voluntary action from making any difference to Australia's overall emissions.

What is needed is an approach that incorporates the best of both worlds: the certainty and universality of a regulatory approach and the motivational and inspirational benefits of allowing people to 'do their bit' in a meaningful way. Price

will play an important role but good policy needs to be realistic about the nature and extent of effects that price changes can have. Likewise, voluntary action can play a part but its potential is limited. The challenge for policymakers is to create an environment in which new regulatory approaches can augment, rather than replace, altruistic behaviour.

### **Price isn't everything**

For the first time in Australia, the CPRS will force polluters to pay for the environmental cost of greenhouse gas emissions by obliging them to purchase pollution permits. The cost of these permits will be passed on to consumers in the form of higher prices for electricity and other energy-intensive products. Price rises will, in theory, motivate individuals to consume less energy and, in turn, reduce their emissions.

Unfortunately, there is evidence that the likely rises in the price of electricity will not deliver significant reductions in household energy use because demand for electricity tends to be insensitive to changes in price. In fact, it has been estimated that a 10 per cent increase in the price of electricity will reduce overall demand by only 3.5 per cent.

The reason that demand for electricity is so insensitive to changes in price is related to the relatively fixed nature of some important factors in household energy use: house design, the number and type of appliances used and so on. The financial benefits of saving energy often do not accrue immediately, instead becoming apparent only when the electricity bill arrives. Moreover, electricity actually accounts for a very small percentage of total household budgets. It is therefore naïve to believe that price increases by themselves can bring about the necessary changes in household consumption of energy.

There is another critical dimension to the way prices influence behaviour. Research has shown that price signals can undermine intrinsic motivation to undertake a socially desirable activity, sometimes even reducing overall levels of the activity because people make their decisions based on different criteria. This phenomenon is known as 'crowding out', since extrinsic considerations overcome intrinsic motivation as the basis for action. It has been comprehensively described in relation to tensions between the voluntary and commercial supply of blood and in relation to the way people volunteer their time for charity.

The potential for price signals to crowd out climate-friendly behaviour makes it imperative that markets and other regulatory interventions are designed in the first instance to complement and reinforce the desire of individuals to make a

difference. For example, mechanisms should be put in place to translate climate 'goodwill' into concrete commitments or pledges by people prepared to change their behaviour. As well, climate-change policy should provide social or other intangible rewards for voluntary action to lower greenhouse gas emissions in addition to any systems of economic rewards or penalties.

Unfortunately, the design of the CPRS is almost entirely inconsistent with these principles. Efforts by individuals (or even whole communities) to reduce emissions will result in increased emissions by big polluters, who can take advantage of the additional permits freed up through voluntary action. Further, the CPRS legislation creates no causal link between the amount of emissions saved by individuals and the number of permits issued. Neither improvements in household energy efficiency, nor reduced car use, nor the installation of solar panels will reduce overall emissions by one tonne. Rather, such changes will simply act as substitutes for the efforts of other sectors of the economy. And once the government sets the national target, there will be no change to overall emissions for at least five years.

Individuals motivated by a desire to 'do their bit' donate billions of dollars to charity each year. It is inconceivable that a government would introduce legislation that, while encouraging people to continue to contribute to charity, withdraws one dollar of funding for every dollar donated. On the contrary, governments sometimes promote matching grants where they promise to *match* amounts equivalent to those already donated. Such an approach serves to motivate individuals in exactly the opposite way to the proposed CPRS.

### **Harnessing the power of cooperation**

One of the biggest strengths of emissions trading is that, unlike voluntary action, it is possible to mandate emissions levels with some degree of certainty. If, however, the overall cap is not ambitious enough, this strength becomes a weakness. Under the CPRS, the target will act as both a cap above which emissions cannot rise, and a floor below which they cannot fall. In other words, the CPRS will actually prevent Australia from taking additional action to reduce emissions.

This weakness can be overcome by establishing a causal link between the amount of emissions saved through voluntary action and the setting of the national target. If it can be shown that individuals or communities have made savings that are greater than would be expected through the introduction of a price signal alone, the number of pollution permits issued the following year could be reduced accordingly. We have termed this a 'cap-and-slice' approach.

Ideally, a cap-and-slice scheme would incorporate all voluntary measures, where 'voluntary' refers to actions that are not motivated by rational, self-interested responses to the price signal associated with the introduction of the CPRS. It would therefore include:

- paying a price premium to purchase GreenPower
- installing photovoltaic solar panels
- changing behaviour patterns to reduce energy use
- planning legislation by local government designed to reduce energy use through improved housing design
- action by state governments to invest in public transport, introduce feed-in tariffs, build large-scale solar farms, set state emissions targets or change land-use regulations
- initiatives by the federal government in addition to the CPRS, such as the homeowner and renter insulation programs and the Mandatory Renewable Energy Target (MRET).

In order for a cap-and-slice approach to work properly, it will be necessary to measure the changes in emissions saved as a result of voluntary action separately from the changes due to the increased price of energy. One way to do this would be to estimate the extent of voluntary action at the 'micro' household level, which would have the benefit of providing a strong feedback signal to individual households but could be costly and complex.

A second way to measure voluntary action is at the 'macro' level. The actual amount of energy used could be compared with forecasts, an approach that would be simpler and possibly more accurate. However, it would not provide direct feedback to individuals and households about their specific contributions to emissions reductions. A mix of the 'micro' and 'macro' approaches would generate the right information for both policymakers and households.

Without a practical way to incorporate the benefits of voluntary action in reducing emissions, the CPRS will send a contradictory signal to Australian households and business. On the one hand, higher prices for energy and energy-intensive products will encourage reduced consumption; on the other hand, the absence of a causal link between behaviour and overall emissions will discourage cooperative contributions in the spirit of climate goodwill. The cap-and-slice proposal allows policymakers to avoid an unnecessary choice between voluntary, cooperative action and exclusive reliance on a strict regulatory approach.



The Australian Parliament has acknowledged the importance of voluntary action. In its report on the CPRS legislation, the Senate Standing Committee on Economics concluded that this ‘design feature’ is eroding support for the scheme and that it ‘must be addressed’. The government has since announced changes to the CPRS which, while appearing to deal with the issue, do not actually provide any incentive for people to act cooperatively to achieve emissions reductions. Yet finding an effective way to integrate voluntary and regulatory approaches to reducing emissions is not just good policy—it is also good politics.

### **Public attitudes towards the CPRS**

As the scientific evidence supporting the existence of anthropogenic climate change has become clearer, people around the world have taken steps to reduce greenhouse gas emissions. Some (such as in Europe) have done so in the presence of a carbon price but the actions of the majority have been completely voluntary.

In order to gauge what Australians think about voluntary versus price-based changes to address climate change, The Australia Institute commissioned a representative online survey of 1,000 adults. The majority of respondents (94 per cent) reported doing something in the past 12 months to lower their greenhouse gas emissions, while 88 per cent said they would do something in the next 12 months. This activity has been entirely voluntary, taking place in the absence of a carbon price. It therefore challenges the proposition that price is the principal motivating factor in bringing about more climate-friendly consumer behaviour. Instead, climate-change policy must be designed to harness the power of voluntary action if maximum emissions cuts are to be achieved.

Survey results also reveal a worrying gap between the public understanding of the CPRS and its actual operation. When asked, *If every household in Australia reduced their electricity use in the future, what effect would you expect this to have on Australia’s total greenhouse gas emissions?* more than three in four respondents (78 per cent) said that emissions would go down. Only one in eight (13 per cent) answered correctly, saying that emissions would stay the same. Even most university-educated respondents were mistaken about this aspect of emissions trading, with 77 per cent saying that emissions would go down if every household reduced their future electricity use.

Despite this unfortunate feature of the CPRS, our survey findings indicate that most Australians believe that deliberate reductions in household electricity use *should* bring down Australia’s overall emissions. Eighty-seven per cent of respondents agreed with the statement, *Households and individuals should be able to contribute to reducing Australia’s greenhouse gas emissions*, while 72

per cent agreed that *My actions make a difference to Australia's greenhouse gas emissions*. Thus, there is a fair degree of optimism among the Australian public about the efficacy of individual climate-friendly action. Given the changes that the CPRS will bring into effect, it will be interesting to re-examine such attitudes when emissions trading is in place and further international agreements on emissions reductions have been made.

Another prominent feature of the CPRS is the generous assistance that it will extend to big polluting companies, particularly those relying substantially on exports. Survey findings indicate that this aspect of the scheme is also at odds with public sentiment. When asked who should take primary responsibility for the economic costs associated with lowering greenhouse gas emissions, most respondents (51 per cent) said that heavy-polluting companies and industries should be responsible. A third (34 per cent) said that government should take primary responsibility, while six per cent thought that households and individuals should.

These findings indicate that the government's decision to give away up to 95 per cent of carbon permits free of charge to the largest polluters carries the risk of reducing the credibility of the CPRS in the minds of the public. If this occurs, there is a danger that overall levels of intrinsic motivation to act in climate-friendly ways will drop as a result.

Survey respondents were also asked for their assessment of the Australian Government's unconditional target to reduce greenhouse gas emissions by five per cent on 2000 levels by 2020. The majority (53 per cent) saw the target as too weak, while a quarter thought it was about right. Just five per cent of respondents regarded the target as too strong and 18 per cent of people were unsure.

Uncertainty about the suitability of the target is entirely understandable given the complexity of both climate science and the policy options. Respondents were therefore asked the following question and given a list of options: *In choosing a greenhouse gas emissions reduction target, which of these should the Australian Government pay most attention to?* They regarded the advice of climate scientists as the most important factor (30 per cent), followed by the impact on the Australian economy (21 per cent) and the impact on low-income households (16 per cent). Notably, less than one per cent of respondents believed that the views of the business community should be the most important factor for government in choosing an emissions reduction target. While the Rudd Government appears to attach significant weight to the concerns of the biggest polluters, particularly in formulating its emissions reduction target, the Australian public is more than 30 times more likely to be concerned with the views of climate scientists.

## Conclusion

The Howard Government abrogated responsibility for tackling climate change. Instead of introducing a national regulatory response, it preferred instead to rely exclusively on the goodwill of individuals, companies and sub-national levels of government. This approach was irresponsible and inadequate for preventing dangerous changes to the global climate.

The Rudd Government is now seeking to introduce an emissions trading scheme that will negate the effects of all voluntary action. While no government should rely exclusively on the goodwill of some of its citizens, voluntary action and emissions trading should work together, not as substitutes for each other. The CPRS as currently proposed creates a zero-sum game in which total emissions are fixed, regardless of what concerned individuals, households, businesses and even governments do to lower them.

Just as donations to charity supplement government expenditure on foreign aid so voluntary efforts to reduce energy use should supplement a legislated reduction in emissions. At present, the policy debate is framed around which approach works better: emissions trading or a completely voluntary approach. We need to move away from this zero-sum game by harnessing the power of both price and cooperation. If we do this, we can have the best of both worlds.



# 1. Introduction

## 1.1 Cooperative versus selfish behaviour

One of the defining features of human nature is our capacity for cooperation. Living collectively rather than in isolation, we learn from an early age to weigh up the consequences of our actions for those around us. The imperative towards cooperative behaviour is so strong that it forms the foundation of cultural practices and social relations around the world. From the family unit to the business corporation to the modern democratic state, mutual interest and cooperation are the organising principles for much human endeavour.

There is of course another conception of human nature, one which has been popular among economists and policymakers in recent decades. According to this account, the impetus for human behaviour is pure self-interest. Cooperative behaviour, according to this concept, occurs only when the individuals in question each directly benefit as a result. This notion of decision-making underlies neoclassical economic thought, in which people invariably make what are called 'rational'<sup>1</sup> decisions after weighing up the costs and benefits of each option. For this reason, it is often associated with the term *homo economicus*.

These two explanations of the motives driving human behaviour, the 'cooperative' and the 'selfish', form the basis of two very different approaches to problem-solving and policy formulation. Cooperative approaches emphasise the shared interests of those affected by the problem and the need for each person to make a contribution towards its resolution. Selfish approaches, on the other hand, attempt to align the interests of the group with those of individuals so that selfish behaviour results in group benefits.

This paper argues that both individual and collective motivations for action can be translated into reduced emissions through well-designed public policy. Rather than simply choosing between a 'cooperative' and a 'selfish' approach based on their relative merits, we seek to show how the strengths of both approaches can be harnessed in the context of a coherent and effective emissions-reduction policy.

## 1.2 Cooperation in the era of climate change

Climate change is perhaps the ultimate test of human cooperative capacity. The size of the 'group' is enormous—the entire human race—and the ability of any one individual to effect change is remote, given the scale of the problem. Nevertheless, cooperative action on climate change is already occurring on a

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<sup>1</sup> It is important to note the very narrow way in which economists define 'rational'. While non-economists may seek to 'rationalise' decisions that appear selfless, economists use the term specifically to refer only to actions that are clearly self-interested and consistent with objective data about individual costs and benefits.

massive scale, with millions of people across the world taking voluntary measures to reduce carbon emissions. In March 2009, for example, 4,000 cities and towns in 88 countries and ‘hundreds of millions of people’ participated in Earth Hour by temporarily switching off their lights.<sup>2</sup> And as Chapter 4 shows, the great majority of Australians have done something in the last 12 months to reduce greenhouse gas emissions.

People who take voluntary action will derive little ‘benefit’ unless virtually everyone else does the same, yet climate cooperation continues to grow. This is testament to the strength of the cooperative urge as well as the esteem in which many people hold the natural environment. But despite this growing ‘goodwill’, greenhouse gas emissions continue to rise steadily. Emissions would doubtless grow more quickly in the absence of such cooperative behaviour, but voluntary action, while potentially part of the solution, cannot constitute the only response if dangerous climate change is to be averted.

An alternative response is to align the interests of the environment with the interests of individuals. The conventional way to do this is through price signals that reward people who act to reduce emissions and penalise those who do not. Strong price signals would also encourage investment in renewable energy and other desirable actions on the part of the business sector. This ‘selfish’ mode of problem-solving underpins two of the most popular policy options for making the transition to a low-carbon economy: a carbon tax and an emissions trading scheme.

Price-based initiatives (discussed in Chapter 2) and other measures that rely on self-interest can achieve a great deal, but policymakers must take care when designing them because the ‘selfish’ mode of human behaviour is not always compatible with the ‘cooperative’ mode. The desire to cooperate, to act in the common interest, can be crowded out by other, more selfish considerations. In the context of climate change, this is likely to result in people (and countries) making purely ‘business’ decisions (‘Will this make me money or lose me money?’) rather than ‘environmental’ decisions (‘What will this do to greenhouse gas emissions?’). The ways in which environmentally friendly cooperation can be encouraged and inhibited are discussed further in Chapter 3.

### **1.3 Cooperation and the CPRS**

In Australia, there is a real danger that price-based initiatives will undermine the voluntary action that many people are already taking unless serious consideration is given to the design of the Australian Government’s Carbon Pollution Reduction Scheme (CPRS). Indeed, this point was recently

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<sup>2</sup> WWF, ‘Earth Hour’s Countdown to Copenhagen’, 2009, Earth Hour website. <<http://www.earthhour.org/home/>> accessed 16 April 2009.

emphasised by government senators in the majority report of the Senate Standing Committee on Economics Inquiry into the Carbon Pollution Reduction Scheme Bill 2009:

People want to feel that they are making a contribution, even if only in a small way, to saving the planet. The growing perception that the CPRS negates actions taken by individual households to reduce emissions is eroding support for the scheme. This must be addressed.<sup>3</sup>

Further, if individuals are encouraged to think purely in terms of their own self-interest rather than the pursuit of a collective goal, it is likely that Australia (or any country that relies solely on individual costs and benefits to frame its response to climate change) will be less committed to participating generously in cooperative international agreements.

Many Australians do not yet fully grasp the implications of an emissions trading scheme for their personal behaviour above and beyond the inevitable increases in the price of energy. In particular, only a minority appear to understand that the proposed CPRS will strip away the capacity of individuals and communities to reduce Australia's (and indeed the world's) net pollution. Instead, such voluntary action will simply free up permits, allowing big polluters to increase their emissions. The differences between the actual workings of the CPRS and public perceptions are explained in Chapter 4.

From the perspective of effective climate policy, what is needed is for cooperative action and self-interested behaviour to work in tandem, not against each other. This means that Australia's approach to greenhouse gas abatement should exploit both drivers of human behaviour and should allow concerned individuals and organisations to 'make a difference'. How this might be achieved is spelled out in Chapter 5.

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<sup>3</sup> Senate Standing Committee on Economics, *Exposure draft of the legislation to implement the Carbon Pollution Reduction Scheme*, April 2009, p. 73, at [http://www.aph.gov.au/Senate/committee/economics\\_ctte/cprs\\_09/report/report.pdf](http://www.aph.gov.au/Senate/committee/economics_ctte/cprs_09/report/report.pdf)

## 2. Using price signals to reduce greenhouse gas emissions

### 2.1 The role of price in economic theory

Price is of central concern in economic analysis. The 'law of demand' is one of the more widely known assertions of neoclassical economists; it states simply that as the price of a good rises, the quantity that will be purchased declines. Although this law appears to conform to common sense, it holds only under a restrictive range of circumstances and is therefore in no way analogous to the law of gravity or the laws of thermodynamics. At best, it is a rule of thumb with many exceptions.

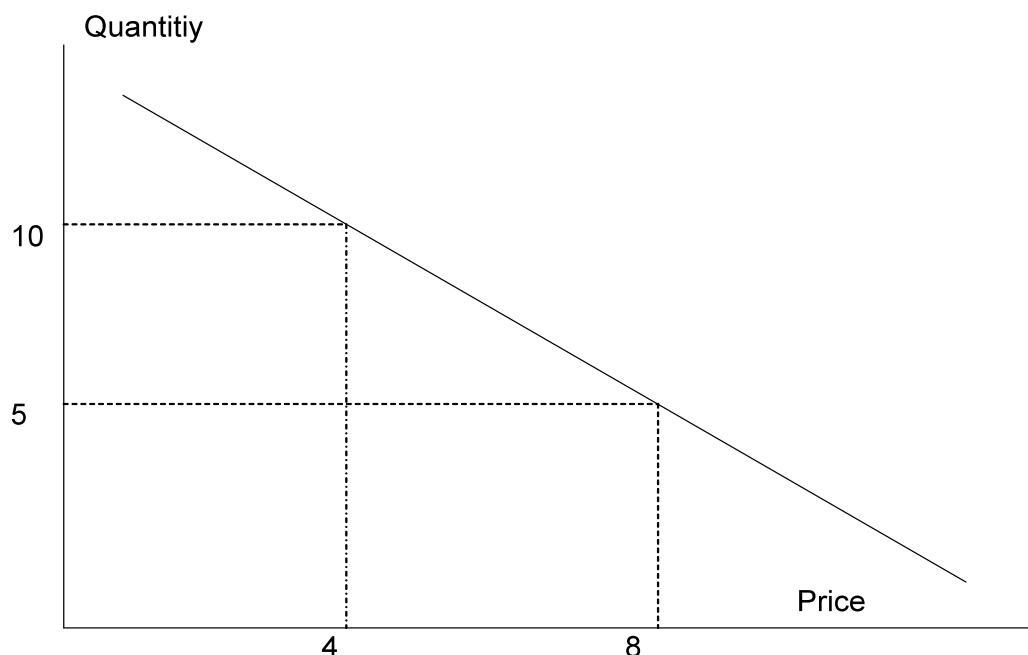
As the price of a product rises, the quantity demanded (defined as willingness and ability to purchase the item) is assumed to fall for two distinct reasons. First, as the price increases, the product becomes relatively more expensive than substitute goods such as other brands of the same type of product. This is called the *substitution effect*.

Second, demand is assumed to fall when prices rise because an increase in the price of a good is equivalent to a reduction in income, the *income effect*. For example, if a person earns \$10 a week and bread costs \$1 a loaf, they can afford to buy 10 loaves but if the price rises to \$2, they can afford to buy only five loaves. As prices rise, an individual's income falls in real terms (that is, after taking account of inflation) and people with lower incomes buy less of everything, including the now more expensive product.

Figure 1 provides a graphical representation of the relationship between price and quantity. The 'demand curve', which is described as downward-sloping, shows that as the price of a product falls, the amount purchased will increase.



Figure 1: Simple demand curve



In economic theory, a price rise leads to less of a product being purchased due to the combination of the substitution effect and the income effect. However, this conclusion is said to hold *ceteris paribus*, meaning 'all other things being equal'. When all other things are not equal, it cannot be assumed that an increase in price will result in reduced demand for the product. Rather than price being the central determinant of an individual's decision to purchase or consume, it is in fact only one of many factors. Some potentially significant non-price factors include convenience, social norms and pre-existing habits. As the following chapters will demonstrate, non-price factors are central to understanding household demand for energy in Australia.

## 2.2 The role of price in reality

The fact that an increase in price *can* lead to a reduction in demand does not mean that it *will*. Certainly, price can be a significant factor but it is necessary to determine the relative importance of price and other influential factors when forming an understanding of consumer behaviour.

Demand for a product is said to be relatively *elastic* if small changes in price have a comparatively large effect on demand; it is said to be relatively *inelastic* if large changes in price have only a small impact on demand. The more sensitive the demand for a product is to changes in price, the more elastic the demand is said to be.

Small changes in price are likely to have a significant impact on the demand for a product (that is, demand is relatively elastic) when the following circumstances are met:

- there are many substitutes for the product in question
- the product accounts for a significant proportion of the household budget
- the goods are 'luxuries' rather than 'essentials'.

On the other hand, demand for a product is likely to be relatively insensitive to price (inelastic) under the following circumstances:

- there are few or no substitutes
- the product accounts for a small percentage of the household budget
- the goods are 'essentials' rather than 'luxuries'
- the goods are complementary to other goods (for example, bread and butter, movies and popcorn, petrol and cars, electricity and air conditioners)
- habit is an important determinant of consumption
- the link between the consumption decision and the cost is not immediate (for example, when months elapse between using an appliance and the bill arriving, or if the bill is paid automatically through direct debit)
- there are social or cultural reasons behind consumption behaviour (for example, chocolate at Easter, flowers on Valentine's Day, anything at Christmas).

The question of whether or not demand for a product is elastic is an empirical rather than a theoretical one that can be tested through observation. By observing closely the relationship between the price of a product, the quantity of the product sold and any significant changes in other factors such as season, social norms and the consumption of complementary goods, it is possible to determine whether the demand is elastic or inelastic.

One of the main determinants of elasticity is the availability of goods that are perceived to be substitutes. Some goods may, on an objective basis, appear to be substitutes but they do not perform that role in the marketplace due to the perception of consumers. For example, very low prices for 'cola' brands do not appear to have any significant impact on the

demand for Coca-Cola; most consumers do not see them as actual substitutes despite the similarities in their chemical composition.

Some products that are generally considered to display a relatively elastic demand include:

- fruit and vegetables
- holiday destinations
- takeaway food.

Alternatively, goods that exhibit inelastic demand include:

- cigarettes
- branded clothes
- household electricity.

### **2.3 The inelasticity of demand for electricity**

The demand for electricity in Australia is relatively price inelastic; significant changes in price have only a small effect on the amount consumed.<sup>4</sup> Figure 2 shows the responsiveness or, more accurately, the lack of responsiveness to a change in price of the amount of electricity consumed in South Australia between September 2000 and December 2004. Both price and quantity are expressed in index form so that the diagram reveals movements away from the levels of price and consumption as at September 2000.

There was a significant increase in the price of electricity between December 2002 and March 2003 but only a very modest reduction in demand over the same period. According to the authors of a report from the National Institute of Economic and Industry Research (NIEIR):

The majority of empirical studies in this area report that the demand for electricity is price inelastic in both the short and long run. This means that a 1.0 per cent change in the electricity price will lead to less than a 1.0 per cent change in the quantity of electricity demanded.<sup>5</sup>

The NIEIR report concludes that the long-run elasticity of demand for electricity in Australia is -0.35. This means a one per cent increase in electricity prices would translate to a reduction in demand of 0.35 per cent.

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<sup>4</sup> NIEIR, *The own price elasticity of demand for electricity in NEM regions: A report for the National Electricity Market Management Company*, June 2007.

<sup>5</sup> NIEIR, p. 2.

Thus, a 10 per cent increase in the price of electricity would lessen electricity consumption by 3.5 per cent in the long run. In the short run, elasticity would be even lower, because it would not include adjustments to the number and type of electrical appliances used in the home. The NIEIR study also suggests that the price elasticity of demand for the household sector is significantly lower than for the commercial and industrial sectors because commercial enterprises are likely to be more responsive to a change in price than residential energy users. This finding is of particular significance when it comes to the design of policies to reduce household sector electricity use.<sup>6</sup>

Figure 2: Quantity and price of electricity sold in South Australia 2000–2004



Source: NIEIR, p. 8.

It is important to point out that the low elasticity of demand for electricity does not imply that people are unconcerned about the price; on the contrary, it simply means that among all the factors that affect demand for electricity, price plays a relatively small role.

One of the main reasons for this lack of sensitivity to changes in its price is the comparatively small proportion of the household budget spent on electricity. Table 1 uses ABS figures to compare household expenditure on fuel and power (mainly electricity and gas), which is modest even in low-income households. The data in Table 1 suggest that a 10 per cent

<sup>6</sup> NIEIR, p. 7.

increase in the price of electricity would result in an additional \$1.80 a week for the lowest-income households and \$2.90 a week for the highest-income households, assuming there was no reduction in the amount consumed. Although some people on very low incomes, for example age pensioners, might struggle to meet such a price increase, it is worth remembering that a 10 per cent increase in the price of electricity equates on a weekly basis to less than the cost of a cup of takeaway coffee. It is highly unlikely that price changes at this level will have a significant impact on the behaviour of most Australian households.

Table 1: Expenditure on domestic fuel and power 2003–04

	Lowest quintile	Second quintile	Third quintile	Fourth quintile	Highest quintile	All
Average weekly expenditure	\$18.24	\$21.79	\$23.97	\$24.85	\$29.12	\$23.59
Proportion of total expenditure	3.0%	2.7%	2.8%	2.7%	2.4%	2.7%

Source: ABS cat. 6530.0<sup>7</sup>

In addition to price, which appears to play a minor role, the factors that are likely to contribute to a household's demand for electricity include:

- the size and design of houses
- the number and type of the appliances already purchased
- lifestyle factors dictating how much people use their appliances (for example, cooking at home, watching television for long periods)
- personal preferences for particular notions of 'comfort' (for example, a stable 23-degree internal temperature or plenty of fresh air)
- personal attitudes to 'wasting money' (for example, a strong aversion to leaving lights on versus a preference for good lighting to deter burglars)
- people's personal attitudes to 'doing their bit for the environment'

<sup>7</sup> ABS, *Household expenditure survey, Australia: summary of results*, Cat. 6530.0, 2006.

- stage of life (for example, young singles spend less time at home on average than retirees and therefore use relatively less energy at home).

As Chapter 4 will show, empirical evidence collected for this paper indicates that the desire to avoid waste and protect the environment plays an important role in shaping individual demand for electricity. This new evidence emphasises the intrinsic (as opposed to price-induced) motivations for reducing energy use and, when combined with observations about the inelasticity of demand for electricity, suggests that policymakers who focus exclusively on the role of price are unlikely to design optimal, or even effective, instruments for tackling climate change.

## 2.4 The CPRS and voluntary action

A poorly understood feature of the Rudd Government's proposed CPRS is that once parliament has set the target for the level of national emissions in 2020, any attempt by individuals, communities or even state governments to lower Australia's domestic emissions by reducing their own consumption of energy will be rendered ineffective.<sup>8</sup>

This feature of the CPRS, which was dismissed by the Climate Change Minister after The Australia Institute highlighted the issue in 2008, is now widely recognised as a significant policy problem. The NSW electricity price regulator, the Independent Pricing and Regulatory Tribunal (IPART), for example, has described the issue:

Under an emissions trading scheme, the quantum of allowable emissions will be fixed. The limit on emissions will apply to all emissions sources covered by the scheme. Additional measures to reduce emissions in sectors covered by the scheme would not result in an increase in emissions abatement—under the global cap, the emissions avoided through undertaking an additional measure would result in an equivalent increase in emissions elsewhere. How and/or where emissions are reduced changes, not the amount.<sup>9</sup>

To understand this mechanism, consider how the scheme is designed to operate. Each year the federal government will issue a fixed number of carbon pollution permits. Many of these will be given to big polluters free

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<sup>8</sup> This applies to sectors covered by the CPRS and emissions that are included in the national carbon accounts. Voluntary measures will continue to be effective in areas like agriculture, which will not be part of any emissions trading scheme for the foreseeable future.

<sup>9</sup> IPART, *Review of NSW climate change mitigation measures: Other industries—Issues paper*, December 2008, p. 20 at: <http://www.ipart.nsw.gov.au/files/Review%20of%20NSW%20climate%20change%20mitigation%20measures%20-%20Issues%20Paper%20-%20December%202008%20-%20APD%20Website.PDF>

of charge, while some will be auctioned. The number of permits issued will restrict the amount of pollution emitted and it will be illegal for big polluters to generate more emissions than the quantity authorised by the permits they hold.

But big polluters can increase their emissions if they buy permits from other big polluters. Although the total number of permits issued by the government will decline by five per cent on 2000 levels by 2020 in order to reduce the overall level of pollution Australia-wide, there is no need for any particular polluter to reduce its own emissions. In fact, any single polluter can keep increasing its emissions so long as it can find another polluter willing to reduce emissions and sell any spare permits.

If an individual, a community, or even a state government voluntarily lowers their energy use, they will in fact only free up permits for big polluters to increase their emissions. Fewer emissions associated with one household's reduced energy use will translate directly into more emissions by aluminium smelters or other large polluters. Similarly, fewer emissions from one state will mean more emissions from another state.

A fundamental flaw in the design of the proposed CPRS is that the entities issued with permits, by and large the big polluters, will continue to 'own' the spare permits that result from emissions reductions, even if those reductions are a consequence of efficiency gains made by individuals or state governments. This so-called 'design feature' of the CPRS in fact destroys any non-price incentive for individuals to undertake additional voluntary measures to reduce emissions.

As Chapter 4 indicates, most Australian households already exhibit some degree of restraint in their use of energy, motivated principally by an intrinsic desire to reduce greenhouse gas emissions. But once the CPRS severs the link between individual action and total emissions, the level of demand *restraint* displayed by households is likely to fall. Although the higher electricity price associated with the CPRS may counteract this shift to some extent, the convenience and comfort of increased energy use could overcome any decline in demand that a small price rise might bring about. Ironically, the decision to ignore the contribution of voluntary efforts under the CPRS may actually result in *higher* permit prices if individuals value their comfort and convenience more highly than manufacturers value an increase in their output.<sup>10</sup>

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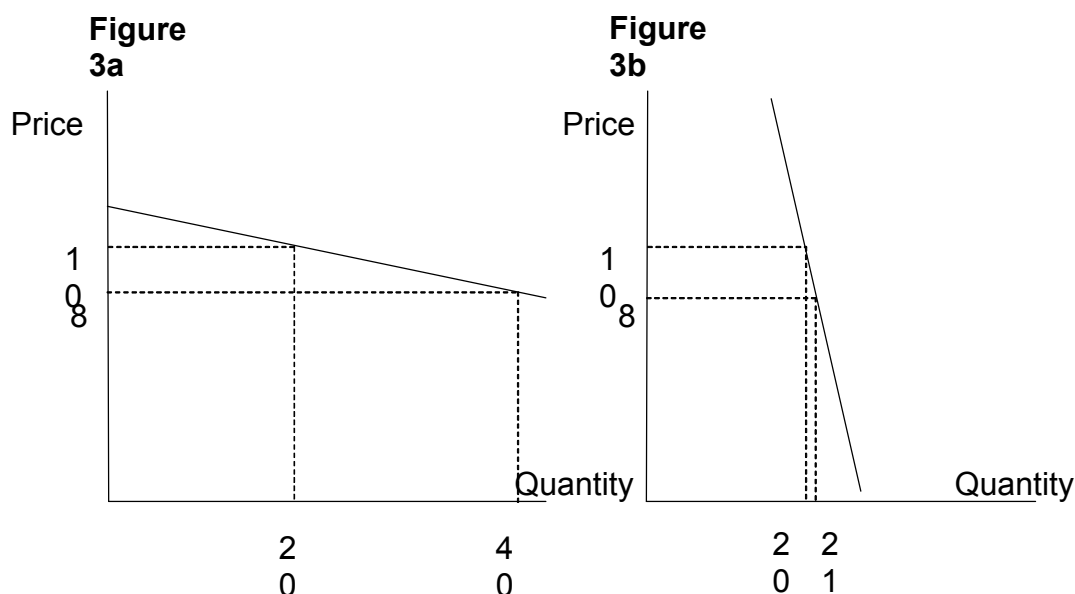
<sup>10</sup> R Denniss, *Fixing the Floor in the ETS: The role of energy efficiency in reducing Australia's emissions*, Research Paper No. 59, The Australia Institute, November 2008.

## 2.5 The price and non-price impacts of the CPRS on the demand for electricity

While economic theory assumes that both price and non-price factors influence the demand for a product, most economic analysis focuses heavily, even exclusively, on the role of price factors.

Figure 3 below shows two different demand curves indicating how a change in price affects the quantity of electricity purchased, all other things being equal. Figure 3(a) shows what happens when demand is highly 'elastic' or sensitive to price while Figure 3(b) shows the minor impact of a price rise when consumers are relatively insensitive to price.

Figure 3: Elastic and inelastic demand curves



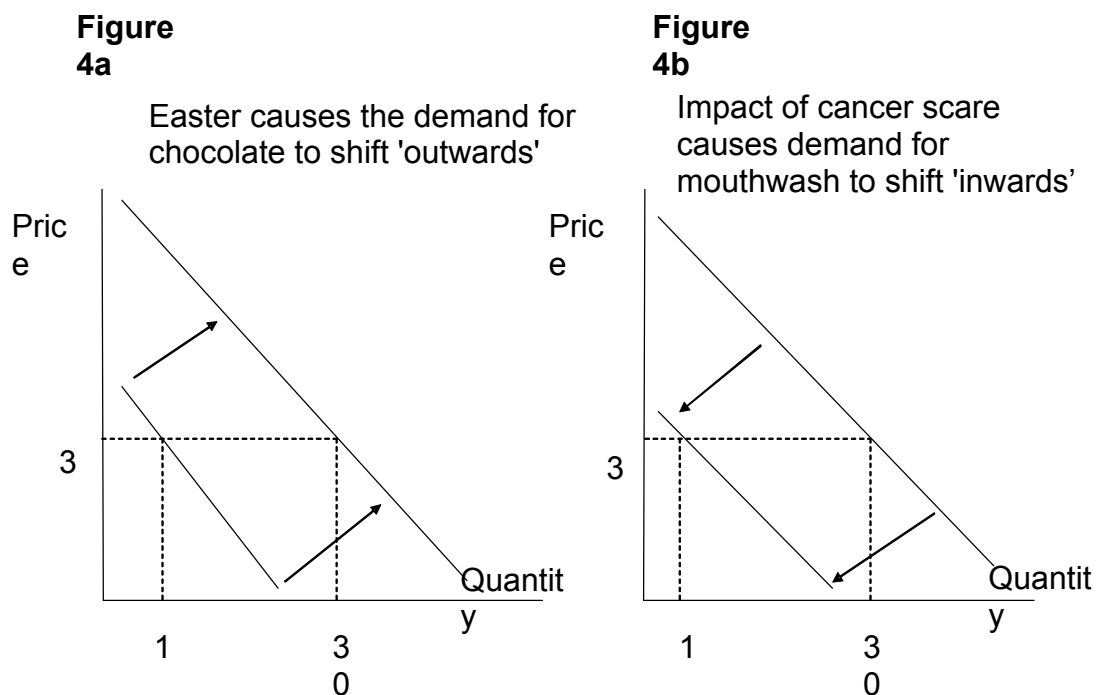
One way to represent the impact on demand of non-price factors, a change in taste for instance, is to 'shift' the demand curve. Figure 4(a) shows how the demand for chocolate increases at Easter time—the demand curve is said to shift 'outwards' meaning that although the price remains the same, consumers purchase significantly more chocolate at Easter than at other times of the year.<sup>11</sup> By contrast, after claims were made that some alcohol-based mouthwashes caused mouth cancer, the demand curve for such products was observed to shift 'inwards',

<sup>11</sup> It is important to note that we are talking here about aggregate demand for chocolate, not individual demand. Although some people may buy *less* chocolate at Easter time, for the market as a whole more chocolate is sold at that time of year than would otherwise be the case.



indicating that at a given price consumers will purchase significantly less mouthwash than in the past. This is shown in Figure 4(b).

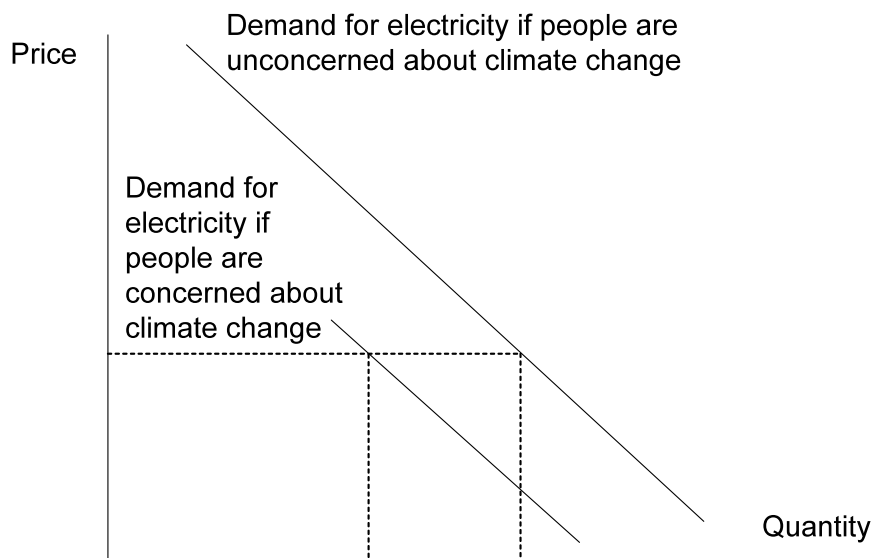
Figure 4: The impact of a shift in tastes and preferences on demand for a product



Clearly, demand for electricity is influenced by non-price factors such as a desire to reduce greenhouse gas emissions. Chapter 4 presents further evidence of the substantial impact of such non-price factors on the demand for energy. The popularity of television programs such as *Carbon Cops* and the surge in demand for products like photovoltaic solar panels and so-called GreenPower, suggest a strong desire on the part of some to 'do their bit' to reduce emissions. Significantly, increased demand for low-emission products has occurred even in states where the electricity price has remained relatively constant.

As Figure 5 shows, the impact of climate goodwill on demand for electricity is analogous to the shift in demand for mouthwash following a cancer scare: those individuals who are concerned about climate change will attempt to lower their emissions and the demand curve for electricity will shift inwards. Thus, for any given price, household demand for electricity will be lower than it would otherwise be if one of the factors shaping consumer demand is an inherent desire to minimise climate harm.

Figure 5: The impact of concern about climate change on the demand for electricity



While the size of the impact on the demand curve illustrated in Figure 5 is an empirical issue, it is extremely unlikely to be zero or close to zero.

The potential effect of the CPRS on the demand for electricity is likely to be twofold. First, it will increase prices and result in some reduction in demand. Second, it will lower the intrinsic motivation of individuals to reduce emissions, particularly when they realise that the level of emissions across Australia under the CPRS is fixed regardless of their actions. If the loss of intrinsic motivation is stronger than the price effect associated with emissions trading, this scenario could see overall household energy consumption rising.

After the passage of the CPRS legislation, it will be some time before the net impact of both the price and motivational effects described above can be determined. However, it is worth considering how emissions-reduction policies might ensure that price and non-price factors work in tandem—towards greenhouse gas abatement—rather than against each other. While the probable size of the intrinsic motivation effect is open to debate, there is no doubt about its direction. It is, therefore, unclear why policymakers concerned with reducing emissions would not seek to incorporate the advantages of both price and intrinsic motivation.

## 2.6 Beyond textbook economics and into the real world

Before examining non-price factors in more detail, it is important to point out that in the purely 'rational' world of the economics textbook all people behave 'rationally' and there is no need to consider the role of 'irrational' voluntary action. The very fact that there are people who are willing to spend money on things that are 'good for the environment' or inconvenience themselves in order to 'do their bit' for the planet, indicates that such an explanation is hopelessly inadequate when designing policies to address climate change. Of course, marketers, psychologists and sociologists realised long ago that the factors affecting consumption patterns are complex and not always readily apparent. For this reason, we will now step beyond the realm of the economics textbook and into the real world.

While some may suggest that examining the 'irrational' or cooperative dimensions of human behavior is unnecessary when developing climate-change policy, experience from other policy debates suggests otherwise. For example, the provision of international aid relies heavily on the altruism of individuals *combined* with the capacity of government to levy taxes and provide direct assistance. Similarly, community services such as Meals on Wheels highlight how voluntary action on the part of individuals and communities can supplement the role of government.

Many Australians donate a proportion of their income to charity and others give their time. Some people, like firefighters, perform paid and unpaid work that places their own lives at risk. While standard economics provides the dominant analytical framework for policy debate in Australia, the altruistic or cooperative frame of reference discussed in the next chapter is just as essential if initiatives across the policy spectrum are to work in the real world.

In this chapter, we have argued that price is only one of a range of factors influencing consumption behaviour, including the consumption of emissions-intensive goods like electricity. The following chapter considers a wide range of social and personal motivations that are not price-dependent. It argues that these motivations, which include social norms, the desire to be part of a group and even the desire to earn the esteem of others, can be powerful incentives for behaviour. It then outlines a policy framework that utilises both price and non-price motivations to change behaviour.

## 3. Using cooperation to lower greenhouse gas emissions

### 3.1 Climate change: the ultimate commons dilemma

In 1968, a seminal article called ‘The Tragedy of the Commons’ appeared in the prominent journal *Science*.<sup>12</sup> Its author, University of California biologist Garrett Hardin, argued that there is a class of human problems that cannot be resolved by ‘technical solutions’, requiring instead a wholesale change in morality and behaviour—what we might now call a cultural shift. Hardin used the example of global population growth, which he felt would eventually threaten our ability to survive as a species regardless of how advanced our agricultural techniques become.

The *commons* refers to any finite resource that is commonly or jointly held rather than individually owned. The term originally referred to the open pastures owned by the public at large in some English and Welsh towns, where farmers could let their animals graze. Common-pool resources are similar to public goods, which are goods that everyone in a society can access; examples include national defence and public broadcasting. Common-pool resources and public goods are both said to be *non-excludable* because it is impossible to prevent particular people from using them. Unlike public goods, however, common-pool resources are *rival goods*<sup>13</sup> because each person’s use diminishes the enjoyment or advantage that the pool can provide to others and overuse can lead to its complete destruction. Common-pool resources include fishing stocks, national parks, water supplies, roads and, crucially, the earth’s atmosphere.<sup>14</sup>

Because of their non-excludability, common-pool resources share another important feature with public goods—the *free-rider problem*. Each person can use the resource regardless of whether they contribute to the cost of maintaining or replacing it. While this is not necessarily a problem for public goods whose utility is not diminished by many users, it can be a serious problem for common-pool resources.

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<sup>12</sup> G Hardin, ‘The Tragedy of the Commons’, *Science*, 162, 1968, pp. 1243–8.

<sup>13</sup> Public goods are said to be ‘non-rival’ in consumption because one person’s use of a resource does not diminish the amount of the resource available to others.

<sup>14</sup> T Dietz, N Dolsak, E Ostrom and P Stern, ‘The Drama of the Commons’, in E Ostrom, T Dietz, N Dolsak, P Stern, S Stonich and E Weber (eds), *The Drama of the Commons*, Committee on the Human Dimensions of Global Change, National Research Council, National Academy Press, Washington, D.C., 2002, pp. 3–35.

A *commons dilemma* arises when the collective demand for the resource exceeds the sustainable supply, thereby threatening the future existence of the resource pool. Without collective action to limit overall consumption, there is little 'rational' incentive for each individual to reduce their use of the resource since others will continue to consume at the same rate. Commons dilemmas present a challenge to the simplistic belief that markets are always the most efficient mechanism for allocating resources because they explicitly undermine the assertion that the pursuit of individual self-interest results in collective benefit.<sup>15</sup>

According to Hardin, the *tragedy* of the commons 'resides in the solemnity of the remorseless working of things'.<sup>16</sup> Using the example of herdsman grazing their animals on open pasture, he observed:

Each man is locked into a system that compels him to increase his herd without limit—in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all.<sup>17</sup>

Hardin was by no means the first to discuss commons dilemmas. Aristotle long ago wrote that 'what is common to the greatest number has the least care bestowed upon it. Everyone thinks chiefly of his own, hardly at all of the common interest'.<sup>18</sup> But since the publication of Hardin's article, the 'tragedy of the commons' has become a pervasive metaphor for thinking about the management of natural and human resources. As Elinor Ostrom notes, the tragedy of the commons has been used to describe such diverse problems as:

... [T]he Sahelian famine of the 1970s, firewood crises throughout the Third World, the problem of acid rain, the organisation of the Mormon Church, the inability of the U.S. Congress to limit its capacity to overspend, urban crime, public-sector/private-sector relationships in modern economies, the problems of international cooperation, and communal conflict in Cyprus.<sup>19</sup>

One of the more effective tools available to commons researchers is game theory, which allows them to investigate in mathematical terms the circumstances in which cooperative collective behaviour is more or less

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<sup>15</sup> The standard economic approach to commons dilemmas is to allocate property rights so that users have an incentive to conserve resources. This is an appropriate response in some circumstances (for example, allocating fishing quotas) but not others (for example, protecting the ozone layer).

<sup>16</sup> Hardin, p. 1244.

<sup>17</sup> Hardin, p. 1244.

<sup>18</sup> E Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action*, Cambridge University Press, Cambridge and New York, 1990, p. 2.

<sup>19</sup> Ostrom, p. 3.

likely. By manipulating different variables, a greater understanding of the factors that affect the use of common-pool resources can be gained. Since game theory became influential in the study of cooperative behaviour,<sup>20,21</sup> game-theoretical research on commons dilemmas has been carried out by economists, psychologists, biologists, ecologists, sociologists and mathematicians.

Hardin's description of the conundrum facing resource users strongly resembles what game theorists refer to as the 'prisoner's dilemma'. This is a situation in which two prisoners are given the opportunity to testify against each other ('defect') or remain silent ('cooperate'). If both prisoners testify, each receives a moderate sentence but if both remain silent, each receives a short sentence. If one prisoner testifies and the other remains silent, the informant is set free while the other prisoner (who cooperated with their co-accused) receives a long sentence. The 'rational' decision for each prisoner, the 'equilibrium' outcome, is to defect even though mutual cooperation would result in the best outcome for both.

The prisoner's dilemma is often used to describe the circumstances in which cooperative behaviour does not occur despite being in the collective interests of a group of people. It is a classic example of a non-zero-sum game, a formal game in which aggregate gains and losses are greater or lower than zero.<sup>22</sup> It is this non-zero-sum feature that makes some game structures especially useful when analysing cooperative behaviour.

There have been a number of valid criticisms of Hardin's model describing the motivations of resource users and of his conclusions regarding the best ways to prevent exploitation of common-pool resources.<sup>23</sup> For example, his proposal that commons dilemmas be addressed through the allocation of property rights, which (he argued) would give people a greater incentive to ration their use of a resource, has been examined in great detail. Subsequent research has highlighted the importance of contextual factors, such as customary usage patterns and the relative status of resource users, in determining the success of property rights and other systems for encouraging better resource management. These debates have contributed to a much more sophisticated understanding of

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<sup>20</sup> T Schelling, *Micromotives and Macrobehavior*, W. W. Norton and Company, New York, and London, 1978.

<sup>21</sup> R Axelrod, *The Evolution of Cooperation*, Basic Books, New York, 1984.

<sup>22</sup> Zero-sum games are also known as 'strictly competitive' games.

<sup>23</sup> R Godwin and W Shepard, 'Forcing Squares, Triangles and Ellipses into a Circular Paradigm: The Use of the Commons Dilemma in Examining the Allocation of Common Resources', *Western Political Quarterly* 32 (3), 1979, pp. 265–77.

the circumstances in which resources are likely to be over-exploited and what kinds of institutions are needed to protect them.<sup>24</sup>

Some of the most intractable commons dilemmas arise from the use of common-pool resources as sinks for pollution. Common-pool sinks can occur at the local level (landfill waste, for example) or globally; the most extensive examples are the earth's oceans and atmosphere. Climate change is perhaps the ultimate commons dilemma, not only because of the scale of its effects but also because of the scale of cooperation needed to mitigate them.

Because of the free-rider problem, there is little 'rational' incentive for individuals (or even small nations) to take concerted action to reduce greenhouse gas emissions unless the rest of the world takes similar action. That said, it is not unusual for countries to 'show leadership' on the international stage. For example, some countries abolished slavery ahead of others, despite the likely impact on economic competitiveness. The Australian Government invested heavily in the 'war on terror' despite the fact that not all countries matched its contribution. Similarly, Australian authorities have expended much effort on detecting performance-enhancing drugs among athletes while other countries have been less vigilant. The lesson here is that rational self-interest is not always the same as the 'national interest' on the world stage.

### **3.2 Factors which influence cooperative behaviour**

In managing a common-pool resource like the earth's atmosphere, the behaviour of resource users—the individuals, households, businesses and governments that depend on non-renewable energy—is of critical importance. If users are inclined to cooperate with each other by restricting their greenhouse gas emissions, the task of protecting the atmosphere from excessive pollution is more straightforward. But if they extract as much as they can—if they fail to cooperate—additional measures such as sanctions, licensing or rationing must be imposed. Determining the circumstances in which cooperation can occur is therefore a crucial area of commons research.

Generally speaking, economists working in this area have tended to focus on situational factors (rules and institutions) as well as the 'payoff structures' (tangible gains and losses) applying to commons problems. Psychologists, by contrast, have concentrated on individual differences,

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<sup>24</sup> Dietz et al.

the social structure surrounding resource use and the way that commons problems are ‘framed’ in communication.<sup>25</sup> This research has yielded significant insights into how climate-friendly behaviour can be encouraged or inhibited. In what follows, some of the most important factors encouraging cooperation over commons dilemmas are discussed, along with the implications for climate policy.<sup>26</sup>

## Communication

One of the best documented findings of commons research is that groups able to communicate with each other are more likely to cooperate than groups in which communication between individuals is difficult. In fact, communication appears to have a generally positive effect regardless of the form it takes. It can be two-way, with resource users having the opportunity to engage in discussion with each other. It can be one-way, with information about the common resource pool being provided to users but with no feedback mechanism possible.<sup>27</sup> Communication can even be implicit; allowing people to interact repeatedly with the common resource pool yields information that they can subsequently use.<sup>28</sup> Similar outcomes can be achieved by allowing them to vote on preferred options. As Walker et al. observe:

The very act of making a proposal and voting on a set of proposals signals limited information to all involved. In particular, it appears to generate information that enables a learning process to occur.<sup>29</sup>

Communication is effective at stimulating cooperation for several reasons:

- it enhances group identity or solidarity (see below)
- it draws forth commitments from individuals to cooperate (see below)
- it enables people to evaluate the likelihood that others will cooperate when determining whether their own ‘sacrifices’ will be reciprocated.<sup>30</sup>

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<sup>25</sup> S Kopelman, J Weber, and D Messick, ‘Factors Influencing Cooperation in Commons Dilemmas: A Review of Experimental Psychological Research’ in E Ostrom, T Dietz, N Dolsak, P Stern, S Stonich, and E Weber, (eds), *The Drama of the Commons*, Committee on the Human Dimensions of Global Change, National Research Council, National Academy Press, Washington, D.C., 2002, pp. 113–56.

<sup>26</sup> Many of the examples used are taken from Kopelman et al.

<sup>27</sup> I Bohnet, and B Frey, ‘The sound of silence in Prisoner’s Dilemma and Dictator Games’, *Journal of Economic Behavior and Organization* 38 (1), 1999, pp. 43–57.

<sup>28</sup> C Keser and F Winden, ‘Conditional cooperation and voluntary contributions to public goods’, *Scandinavian Journal of Economics* 102, 2000, pp. 29–39.

<sup>29</sup> J Walker, R Gardner, A Herr and E Ostrom, ‘Collective Choice in the Commons: Experimental Results on Proposed Allocation Rules and Votes’, *The Economic Journal* 110 (460), 2000, p. 231.



From the perspective of climate-change policy, these findings indicate that any measure that reduces the social distance between people is likely to bring about more cooperative environmental behaviour. Communication may be local (between family members or neighbours), national (political discussion) or even global (via the mass media and the internet). Indeed, observing climate-friendly activities on the other side of the world may be especially persuasive for people who are concerned about the scale of cooperative action required to address climate change. Regardless of the type of communication (one-way information provision or two-way dialogue) or the level at which it occurs (individuals, organisations or nation states), more communication is likely to engender greater climate cooperation.

### **Public commitments**

Commons research has shown that people who publicly commit to cooperate are more likely to do so than those who are not given the opportunity to commit.<sup>31</sup> Indeed, commitments have a positive influence on cooperative behaviour even where they are not made publicly. This has led researchers to conclude that the drive to honour a commitment is 'internal' rather than socially motivated.<sup>32</sup>

For policymakers, an important conclusion from this body of research is that societies able to generate personal commitments from their citizens will manage natural resources more effectively than societies that rely exclusively on coercion or price.<sup>33</sup> Climate-change policy should therefore be designed to elicit positive commitments from people who are prepared to 'do their bit' in principle but who have not yet translated such sentiments into action. It is also important that such commitments are perceived to be credible rather than made for self-interested reasons.

### **Group size and group identity**

Another well-established finding from commons research is the tendency of smaller groups to behave more cooperatively than larger groups. It has

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<sup>30</sup> R Dawes, A van de Kragt and J Orbell, 'Cooperation for the benefit of us—Not me, or my conscience', in J Mansbridge (ed), *Beyond Self-Interest*, University of Chicago Press, Chicago, 1990, pp. 97–110.

<sup>31</sup> X Chen and S Komorita, 'The effects of communication and commitment in a public goods social dilemma', *Organizational Behavior and Human Decision Processes* 60 (3), 1994, pp. 367–386.

<sup>32</sup> N Kerr, J Garst, D Lewandowski and S Harris, 'That still, small voice: Commitment to cooperate as an internalized versus a social norm', *Personality and Social Psychology Bulletin* 23 (12), 1997, pp. 1300–1311.

<sup>33</sup> Kopelman, p. 135.

been suggested that there is a natural limit to the number of people able to form a cohesive group.<sup>34</sup> Commonly cited as evidence for this concept is ‘Dunbar’s number’, the number that evolutionary psychologist Robin Dunbar proposed as a theoretical limit to group size based on the size of the human neo-cortex—around 150.<sup>35</sup> While questions remain as to whether this concept is directly applicable to commons dilemmas, research has shown that increasing the number of people who need to cooperate to manage a common-pool resource lowers the likelihood of that cooperation taking place.<sup>36</sup>

It has been suggested that an important factor in this phenomenon is ‘self-efficacy’: the belief that one can take, and is taking, effective action to achieve a certain result (such as the group using a resource sustainably). Research by Kerr showed that members of small groups feel more ‘self-efficacious’, able to make more of a difference than members of larger groups.<sup>37</sup> This held true even where the difference in group size was *perceived* rather than actual. Kerr suggests that small group size can actually bring about ‘illusions of efficacy’, where people think they are making more of a difference than they really are.<sup>38</sup> By the same token, being part of a large group can encourage individuals to be more pessimistic about their contribution to resource management.

Group identity, or identification with one’s community, can also have a positive effect on cooperation. Research has found that people willingly grant authorities control over a resource where it is threatened by a severe shortage.<sup>39</sup> Moreover, the perceived legitimacy of the authority’s management depends on whether it allocates the resource fairly and has appropriate decision-making processes in place.<sup>40</sup> In fact, people who take more pride in their community tend to feel more positively about the regulation of the resource and less worried about their own share. Tyler

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<sup>34</sup> M Gladwell, *The Tipping Point: How Little Things Can Make a Big Difference*, Little, Brown, Boston, 2000.

<sup>35</sup> R Dunbar, ‘Coevolution of neocortical size, group size and language in humans’, *Behavioral and Brain Sciences* 16 (4), 1993, pp. 681–735.

<sup>36</sup> R Dawes, ‘Social dilemmas’, *Annual Review of Psychology* 31, 1980, pp.169–193.

<sup>37</sup> N Kerr, ‘Illusions of efficacy: The effects of group size on perceived efficacy in social dilemmas’, *Journal of Experimental Social Psychology* 25 (4), 1989, pp. 287–313.

<sup>38</sup> Kerr, p. 287.

<sup>39</sup> T Tyler and P Degoey, ‘Collective restraint in social dilemmas: Procedural justice and social identification effects on support for authorities’, *Journal of Personality and Social Psychology* 69 (3), 1995, pp.482–497.

<sup>40</sup> D Messick, H Wilke, M Brewer, R Kramer, P Zemke and L Lui, ‘Individual adaptations and structural change as solutions to social dilemmas’, *Journal of Personality and Social Psychology* 44 (2), 1983, pp. 294–309.

and Degoey suggest that the effectiveness of regulators is ‘primarily linked to the nature of their social bonds with community members’.<sup>41</sup>

Given the effects of group size and group identity on cooperative behaviour, it is important that climate-change policy works to bring together groups of people with shared interests or backgrounds in promoting climate-friendly behaviour. At the same time, to avoid the possible onset of pessimism or apathy, these people must be reassured that their actions are in fact making a real difference. In addition, decisions about the allocation or division of responsibilities in reducing greenhouse gas emissions should be made in good faith and with regard to socioeconomic fairness. This should be communicated to all concerned in order to emphasise the legitimacy and authority of regulators and others involved in climate-change policy.

## Framing

Crucial to people’s willingness to cooperate over commons dilemmas is their perception of the cause of the problem. For example, during the 1976–77 drought in California, people who were light users of water tended to think that the drought was caused by natural forces; people who were heavy users tended to believe that the shortage was the result of human activity.<sup>42</sup> This reinforces the importance of framing—the way the problem and potential solutions are presented—to how people think about and respond to environmental issues. Importantly, framing commons dilemmas in terms of what must be given up is likely to be less effective at encouraging cooperation than emphasising what can be gained through sustainable management and behaviour.<sup>43,44</sup>

Other research has found that people are more likely to engage in cooperative behaviour if it is framed in ‘cooperative’ rather than ‘competitive’ terms.<sup>45</sup> Unfortunately for those interested in the rapid introduction of effective climate-change policy in Australia, the Rudd Government has chosen to ‘frame’ its case for addressing the problem in

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<sup>41</sup> Tyler and Degoey, p. 482.

<sup>42</sup> F Talarowski, ‘Attitudes Toward and Perceptions of Water Conservation in a Southern California Community’, unpublished dissertation, University of California, Santa Barbara, 1982.

<sup>43</sup> M Brewer and R Kramer, ‘Choice behavior in social dilemmas: Effects of social identity, group size, and decision framing’, *Journal of Personality and Social Psychology* 50 (3), 1986, pp. 543–549.

<sup>44</sup> S Hatfield-Dodds, R Nelson and D Cook, ‘Adaptive governance: An introduction, and implications for public policy’, 2008. To be published in *Global Environmental Change: Human and Policy Dimensions*.

<sup>45</sup> E Fehr and U Fischbacher, ‘Why social preferences matter: the impact of non-selfish motives on competition, cooperation and incentives’, *The Economic Journal* 112, 2002, pp. C1–C33.

terms of ‘environment versus employment’. By focusing on the tradeoff between the long-run benefits of tackling climate change and the short-run impact on employment in some industries, the government has, either deliberately or inadvertently, framed the climate-change debate in a way that is unlikely to achieve widespread support. Similarly, both the previous Howard Government and the current Rudd Government have sought to frame Australia’s international contribution to fixing climate change in competitive rather than cooperative terms. Instead of urging Australians to support strong action with confidence that other countries will join us, they have focused instead on the notion that it would be irresponsible for Australia to act first. The implication is that other countries cannot be trusted to exhibit the same degree of concern about climate change as Australia.

Given the importance of framing, the implications for climate-change policy are both critical and difficult to formulate in any definitive way. There are many ways of framing a problem and these will resonate with different people in different ways. One suggestion might be to focus on *what can be gained* through sustainable policies and actions rather than on *what must be given up*. Another might be to emphasise that, rather than natural processes acting independently, it is human society that is the cause of climate change. In any case, the politics of climate change in coming years is likely to be dominated by the way that its causes and solutions are framed in public debate and private interaction.

### **Individual differences**

Another factor influencing the extent of cooperative behaviour relates to the differences between individuals. Psychologists distinguish between people who have ‘pro-social’ orientations and those who have ‘pro-self’ orientations. Pro-social individuals tend to display cooperative or altruistic motives, to regard behaviour as rational if it is in the interests of the collective or group, and to be more concerned with the *morality* of behaviour. Pro-self individuals tend to have individualistic or competitive motives, interpret rationality according to what is right for the individual, and are more concerned with the *effectiveness or utility* of behaviour.<sup>46</sup> Kopelman et al. conclude that pro-socials ‘are more likely to cooperate in commons dilemmas than proselves’.<sup>47</sup> Pro-selves, by contrast, are inclined to harvest more resources from a common pool than pro-social

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<sup>46</sup> W Liebrand, R Jansen, V Rijken and C Suhre, ‘Might over morality: Social values and the perception of other players in experimental games’, *Journal of Experimental Social Psychology* 22 (3), 1986, pp. 203–215.

<sup>47</sup> Kopelman, p. 120.

individuals.<sup>48,49,50</sup> This suggests that the contexts in which problems are framed, for example as having either collective or individual benefits, is critical to the way people subsequently behave.

The primary lesson for climate-change policy from this literature is that people will respond in diverse ways to whatever mechanisms and messages are used to lower greenhouse gas emissions. Some people will respond well to requests for cooperative action while others will regard it as fundamentally 'irrational' because of the free-rider principle. Climate-friendly action should therefore have both a cooperative rationale *and* extend direct benefits to individuals. In other words, price incentives and other 'selfish' measures should work in concert with, rather than against, initiatives to promote voluntary action. The design of climate-change policy based on the need for such mechanisms to reinforce each other is discussed at length in Chapter 5.

### **Social versus economic rewards**

Commons researchers often devise experiments in which rewards are given for different types of behaviour on the part of participants. Commonly, these rewards are economic, either in reality (with participants being given cash) or theoretically (with tokens signifying tangible rewards). Research on social rewards—that is, the approval of others—has shown that there are certain contexts in which such rewards can be very effective even in the absence of material incentives. Where people are able to communicate or establish some form of group identity, social rewards have a positive effect. Where people are complete strangers, by contrast, social rewards have a very weak influence on their propensity to cooperate. Importantly, even where strong group identity exists, there will always be a minority who exploit a common-pool resource despite the willingness of others to cooperate.<sup>51</sup>

These findings underscore the importance of building group identity and effectively using communication to encourage climate-friendly behaviour. They also show that non-material factors can be just as important as

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<sup>48</sup> R Kramer, C McClintock and D Messick, 'Social values and cooperative response to a simulated resource conservation crisis', *Journal of Personality* 54 (3), 1986, pp. 576–592.

<sup>49</sup> C Parks, 'The predictive ability of social values in resource dilemmas and public goods games', *Personality and Social Psychology Bulletin* 20 (4), 1994, pp. 431–438.

<sup>50</sup> S Roch and C Samuelson, 'Effects of environmental uncertainty and social value orientation in resource dilemmas', *Organizational Behavior and Human Decision Processes* 70 (3), 1997, pp.221–235.

<sup>51</sup> S Gächter and E Fehr, 'Collective action as a social exchange', *Journal of Economic Behavior and Organization*, 39 (4), 1999, pp. 341–369.

economic incentives, a finding of crucial significance for the design of economic mechanisms, such as emissions trading, intended to lower greenhouse gas emissions.

## Markets and sanctions

The establishment of markets and the imposition of sanctions are two standard responses to commons dilemmas but they can sometimes have unintended consequences. Blount White found that the use of market mechanisms can be counterproductive in certain circumstances.<sup>52</sup> In her experiment, the act of paying water users to stop taking water actually increased the rate at which the remaining water supply was exhausted. Participants later reported using ‘the strategy of trying to take out as much [water] as possible for oneself and then trying to get bought out’.<sup>53</sup> Blount White concludes that ‘a self-regulated, market-based approach is not necessarily effective at controlling detrimental social choice patterns’.<sup>54</sup>

Sanctions against undesirable behaviour in relation to common-pool resources yielded similar results. Examining the effect of using household meters during a water shortage, Van Vugt and Samuelson established that when the water shortage was seen to be severe, households without meters took greater pains to conserve water than those with meters.<sup>55</sup>

The design of economic sanctions is also of crucial importance. If sanctions are weak—if fines are small or the chances of being ‘caught’ are low, for instance—taking more than the allocated amount, or ‘cheating’, can actually increase. Strong economic sanctions can have a beneficial effect on cooperative behaviour but only for people who regard the choice as a ‘business decision’ rather than an ethical one.<sup>56</sup> Thus, while sanctions can be useful in particular contexts, they ‘may undermine intrinsic motivations for cooperation and other generally helpful factors for community life such as interpersonal trust’.<sup>57</sup>

Intrinsic motivation—that is, the desire to act cooperatively even in the absence of material or other incentives—is extremely important if

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<sup>52</sup> S Blount White, ‘Testing an economic approach to resource dilemmas’, *Organizational Behavior and Human Decision Processes* 58 (3), 1994, pp. 428–456.

<sup>53</sup> Blount White, p. 443.

<sup>54</sup> Blount White, p. 454.

<sup>55</sup> M Van Vugt and C Samuelson, ‘The impact of personal metering in the management of a natural resource crisis: A social dilemma analysis’, *Personality and Social Psychology Bulletin* 25 (6), 1999, pp. 731–745.

<sup>56</sup> Kopelman, p. 144.

<sup>57</sup> Kopelman, p. 125.

voluntary action is to play a role in addressing climate change. There is persuasive evidence that introducing incentive payments to encourage the supply of a public good (such as environmentally friendly behaviour) can actually result in *less* of the public good being supplied, since people make their decisions based on different criteria.<sup>58,59</sup> This phenomenon is known as ‘crowding out’ because extrinsic considerations overcome intrinsic motivation as the basis for action. It has been comprehensively described in relation to tensions between the voluntary and commercial supply of blood.<sup>60,61</sup>

Unless institutions are carefully designed, crowding out can mean that a carbon price could actually result in lower levels of climate-friendly behaviour, particularly if the carbon price is not high enough to offset the reduction in intrinsic motivation to ‘do something for the environment’. Reeson argues that crowding out can even have a ‘motivational spill-over effect’ into other areas of environmental protection (for example water conservation). Just as worryingly, it appears that changes in the motivational basis for individual behaviour are often *unidirectional*. Once extrinsic factors become the basis for decision-making, it is difficult to recapture intrinsic motivation.<sup>62</sup> Thus bad policies, ones which undermine intrinsic motivation, cannot necessarily be reversed.

Figure 6, adapted from Frey, represents the supply of environmental public goods.<sup>63</sup> It suggests that for positive environmental behaviour (self-restraint in relation to energy use for example), individuals possess a level of intrinsic motivation (point *y* on the horizontal axis). As the price rises above zero, the amount of intrinsic motivation is reduced (at price *a*, the quantity of positive environmental behaviour has fallen from *y* to *x*). However, if the price for behaving in a positive manner is high enough, it is possible to ‘bribe’ people back to their previous quantity of behaviour (at price *b* the quantity of behaviour is back to *y*). In the example depicted, it

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<sup>58</sup> U Gneezy. and A Rustichini, ‘Pay Enough or Don’t Pay at All’, *Quarterly Journal of Economics*, 2000, pp. 791–810.

<sup>59</sup> B Frey, *Not Just For the Money: An Economic Theory of Personal Motivation*, Edward Elgar Publishing, Cheltenham, 1997.

<sup>60</sup> R Titmuss, *The Gift Relationship: From Human Blood to Social Policy*, Allen & Unwin, London, 1970.

<sup>61</sup> D Trief, ‘Models of Altruism as applied to Human Blood and Organ Donation’, *Penn Science* 2004, 2 (2), 2004.

<sup>62</sup> A Reeson, *Institutions, Motivations and Public Goods: Theory, Evidence and Implications for Environmental Policy*, CSIRO Working Paper Series, Commonwealth Scientific and Industrial Research Organisation, 2008.

<sup>63</sup> B Frey, *Inspiring Economics: Human Motivation in Political Economy*, Edward Elgar, Cheltenham, 2001.

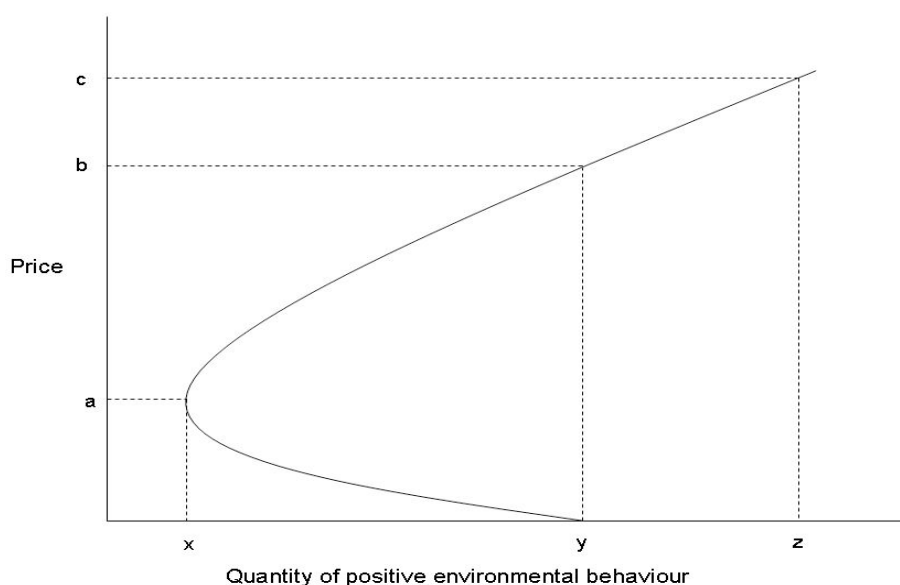
is much more expensive to bribe people to achieve a given level of behaviour than it is to rely on intrinsic motivation.

In the orthodox economic explanation of behaviour described in Chapter 2, it was suggested that there is a clear distinction between the effect on behaviour of changes in price and changes in non-price factors, such as motivation, desire or advertising. What the analysis in Figure 6 suggests, however, is that for some behaviours there is a causal link between a change in price and a change in underlying motivation. Under such circumstances, it becomes extremely difficult, and perhaps impossible, to analyse the impact of a change in price *ceteris paribus*.

Orthodox economic analysis *assumes* that it is impossible for a causal link to exist between price and inherent motivation. Given experimental evidence showing that offering a price can diminish or even destroy intrinsic motivation, orthodox economic approaches are inappropriate when the impact of price on intrinsic motivation is likely to be significant.

As the data in Chapter 4 show, there is a strong intrinsic motivation among Australians to 'do their bit' to help avoid climate change. Under such circumstances, focusing simply on the role of price in motivating behaviour will actually increase the costs of addressing climate change. This is because the price required to 'match' intrinsic motivation can be significant, while a low carbon price will be ineffectual in avoiding dangerous changes to the climate.

Figure 6: The effects of price on positive environmental behaviour



Source: Frey, *Inspiring economics*.



The potential for price signals to crowd out climate-friendly behaviour makes it imperative that markets and other regulatory interventions are designed in the first instance to complement and reinforce the desire of individuals to make a difference. Good climate-change policy would therefore acknowledge voluntary efforts by individuals to lower greenhouse gas emissions and provide social rewards when they are made. Good policy would also encourage the development of social norms grounded in sustainable practices. This will call attention to people's control over their own environmental impact by helping them to focus on the cooperative rather than the competitive rationale for climate-friendly behaviour—even in the presence of a carbon price.

## Uncertainty

When there is uncertainty about the size of the common-pool resource or about what constitutes a sustainable level of consumption or extraction, people tend to consume more resources and expect that others will do the same.<sup>64</sup> Users can claim that they thought the pool of resources was larger; thus uncertainty can 'act to diffuse personal accountability'.<sup>65</sup> Because of the negative influence that uncertainty has on cooperative behaviour, it is imperative that steps are taken to reduce the level of uncertainty associated with common-pool dilemmas.

Uncertainty is of particular relevance to climate policy because of the potential for vested interests to deliberately foster confusion about the scientific evidence supporting the existence of anthropogenic climate change. Messages that discredit the need for urgent action enjoy a disproportionate amount of support, both in resources and access to the media and policymakers.<sup>66</sup> Similarly, uncertainty about the actions of other countries can be used to discredit the potential for Australia to play a global leadership role in committing to reduce emissions. Climate-change policy should therefore strive to communicate the current scientific consensus and its implications for the global, national and local action required to prevent and/or mitigate the threat of climate change.

### 3.3 Lessons for climate-change policy

These research findings about what motivates cooperative behaviour in the context of resource constraints allow us to identify a set of principles

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<sup>64</sup> D Budescu, A Rapoport and R Suleiman, 'Resource dilemmas with environmental uncertainty and asymmetric players', *European Journal of Social Psychology* 20 (6), 1990, pp. 475–487.

<sup>65</sup> Kopelman, p. 126

<sup>66</sup> C Hamilton, *Scorcher: The Dirty Politics of Climate Change*, Black Inc. Agenda, Melbourne, 2007.

for guiding the development of policies to promote the transition to a low-carbon economy. They also suggest a set of principles to underpin key messages in communicating with the public.

### **Principles for policy development**

Policies should be designed to:

- reduce the social distance between those with a stake in climate change and between people around the world
- translate climate 'goodwill' into concrete commitments or pledges by individuals prepared to change their behaviour
- promote social or other intangible rewards for climate-friendly behaviour in addition to any systems of economic rewards or penalties
- ensure that market-based mechanisms or sanctions do not have unintended consequences such as undermining people's intrinsic motivation to behave cooperatively
- complement and reinforce the desire of individuals to make a difference
- acknowledge the efforts of individuals who act voluntarily to lower greenhouse gas emissions and provide social rewards when they continue to do so.

### **Principles for communication**

Communication about the need to cooperate in lowering greenhouse gas emissions should:

- call attention to people's control over their own environmental impact and encourage the development of social norms grounded in sustainable practices
- reassure people that their actions are making a real difference to the level of greenhouse gas emissions
- focus on what can be gained through sustainable policies and behaviour rather than what must be given up
- highlight both the moral imperatives of climate change and the rational basis for restraint in energy use
- explain the current scientific consensus and its implications for the global, national and local action required to prevent and/or mitigate the dangerous effects of climate change.

Together, these principles allow us to evaluate government responses to climate change, particularly in the context of the need for global and local cooperation. By these measures, the Australian Government's communication about climate change has been highly appropriate, particularly in emphasising the moral grounds for action. However, as Chapter 5 makes clear, its policy position is less consistent with the evidence on what is likely to encourage cooperation. Specifically, and as the Senate Standing Committee on Economics recently noted, the proposed design of the CPRS will undermine people's intrinsic motivation to behave sustainably unless it is modified to take account of voluntary action. In the next section, we consider the extent to which voluntary action to lower carbon emissions is already taking place in Australia and across the world.

## 4. Climate cooperation in Australia

In the previous chapter, we examined the factors affecting people's propensity to engage in cooperative behaviour in the collective interest and related these to the challenges posed by climate change. In this chapter, we present survey findings on public attitudes towards climate change and on the actions that many Australians are already taking to lower greenhouse gas emissions.

### 4.1 Public attitudes towards climate-change action

Since the beginning of the 21<sup>st</sup> century, climate change has become an issue of sufficient public concern that governments and politicians around the world have been forced to respond. In Australia, disillusionment with the government of John Howard coincided with the 2006 visit of Al Gore to promote his documentary, *An Inconvenient Truth*. With the Howard Government refusing to acknowledge the seriousness of the threat posed, Kevin Rudd promised to take strong action on climate change if Australians voted for Labor. After winning government, Rudd's first official action as Prime Minister was to sign the Kyoto Protocol at the UN Climate Change Conference in Bali in December 2007. Since then, the centrepiece of the Rudd Government's climate-change policy has been the introduction of an emissions trading scheme, subsequently known as the CPRS. The government's White Paper outlining the operation of the CPRS was released in December 2008.<sup>67</sup>

In order to gauge community attitudes and to ascertain what people are already doing to reduce greenhouse gas emissions, The Australia Institute commissioned an online survey of 1,000 people. The survey sample was representative of the adult Australian population by age, gender and state/territory.<sup>68</sup>

Survey findings show that support for action on climate change among the Australian public remains strong. When asked, *Do you think Australia should take deliberate action to lower greenhouse gas emissions?* four in five survey respondents (81 per cent) agreed, while only eight per cent disagreed. This is broadly in line with the results of other recent opinion

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<sup>67</sup> Department of Climate Change, *Carbon Pollution Reduction Scheme: Australia's Low Pollution Future*, White Paper, December 2008, at <[www.climatechange.gov.au/whitepaper/index.html](http://www.climatechange.gov.au/whitepaper/index.html)> accessed 25 May 2009.

<sup>68</sup> For further details about the survey methodology see Appendix B.

polls on the issue of climate change, which indicate that around eight in ten Australians are concerned about it.<sup>69</sup>

Moral or ethical considerations appear to play a role in the public's support for Australia to take action on climate change. A majority of survey respondents (59 per cent) agreed with the statement, *As big users of energy, Australians have a greater responsibility to reduce greenhouse gas emissions than people in other countries*, while 34 per cent disagreed. Most respondents (58 per cent) also agreed with the statement, *As a rich country, Australia has a greater responsibility to reduce greenhouse gas emissions than poorer countries*; 37 per cent disagreed with that statement.

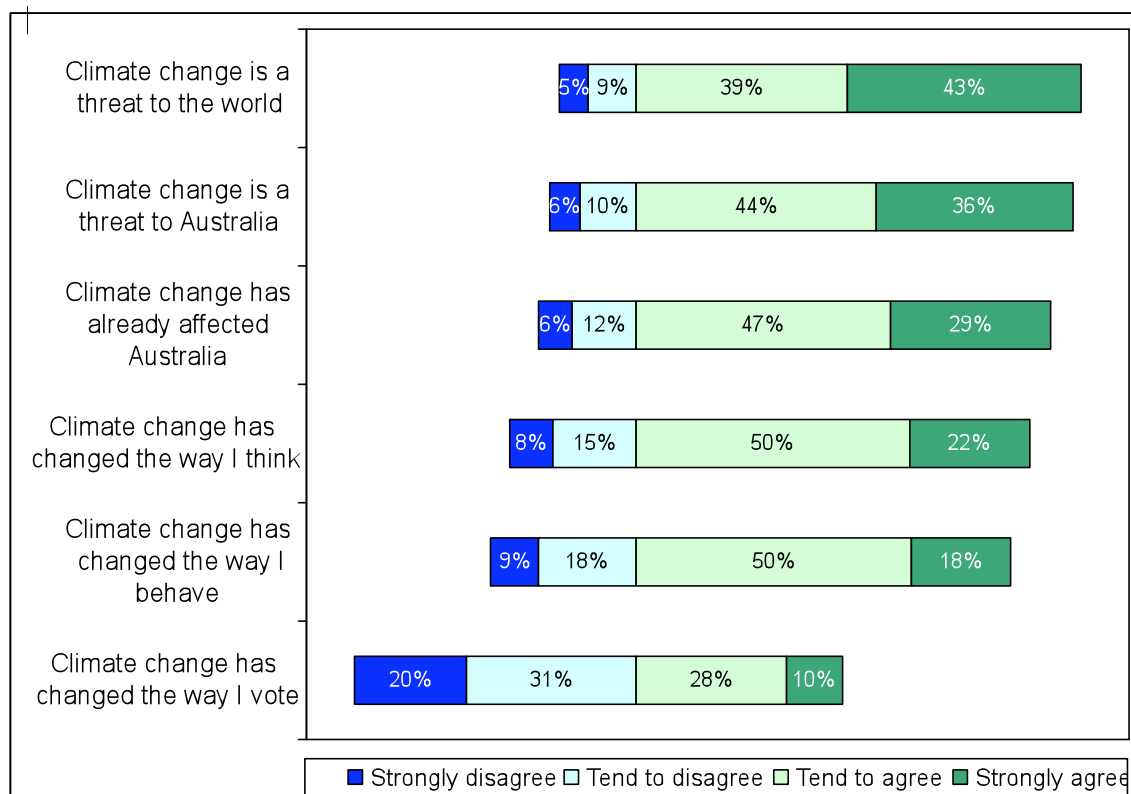
Survey participants were also asked to respond to a series of attitudinal statements about climate change. As Figure 7 shows, 80 per cent agreed that *Climate change is a threat to the world*, 81 per cent agreed that *Climate change is a threat to Australia* and 76 per cent agreed that *Climate change has already affected Australia*.

Significantly, 72 per cent of respondents agreed that *Climate change has changed the way I think*, 69 per cent agreed that *Climate change has changed the way I behave*, and 38 per cent agreed that *Climate change has changed the way I vote*.

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<sup>69</sup> N Collins, *What Do Australians Say About Climate Change?* Discussion Paper 09-01, Crawford School of Economics and Government, Australian National University, 2009.

Figure 7: Attitudes to climate change



Base = 1,000

## 4.2 Individual Australians taking action

There is much evidence that individuals, both in Australia and around the world, are already taking action to reduce emissions. This has largely occurred without the inducement of a price signal to encourage emissions abatement, such as would be in place under an emissions trading scheme. It can therefore be considered 'voluntary'. In order to gauge the nature and extent of voluntary action in Australia, survey respondents were shown a list of possible ways for individuals to reduce greenhouse gas emissions. They were then asked:

- In the last 12 months, have you done any of the following because you wanted to reduce greenhouse gas emissions?
- In the next 12 months, do you plan to do any of the following in order to reduce greenhouse gas emissions?

As tables 2 and 3 show, the vast majority of Australians, some 93.6 per cent, have done at least one thing in the last 12 months to lower greenhouse gas emissions and 88 per cent plan to do something in the next 12 months. The most common actions were installing energy-efficient light bulbs, taking shorter or fewer showers, turning off appliances at the switch, buying green-friendly products and driving less.

Table 2: Actions taken in last 12 months to reduce greenhouse gas emissions

Action taken	% of respondents
Installed energy-efficient light bulbs at home	71.7%
Taken shorter showers/fewer showers	70.4%
Turned appliances off at the switch	64.7%
Bought green-friendly products	49.0%
Driven less	41.8%
Encouraged other people to reduce their energy use	34.6%
Caught public transport more	26.6%
Bought fewer products	22.6%
Eaten less meat/no meat	19.8%
Voted for a climate-friendly candidate in an election	17.5%
Taken fewer airline flights	13.4%
Encouraged your workplace to make changes to reduce energy use	13.0%
Offset your carbon emissions (e.g. through a tree-planting scheme)	11.8%
Taken part in community activities	9.9%
Contacted a politician	5.2%
Installed solar panels/solar hot water on your roof	4.9%
Other	4.5%
None of these	7.4%

Base = 1,000

Table 3: Actions planned for next 12 months to reduce greenhouse gas emissions

Action planned	% of respondents
Turn appliances off at the switch	57.9%
Buy green-friendly products	55.8%
Take shorter showers/fewer showers	54.6%
Install energy-efficient light bulbs at home	49.6%
Drive less	45.4%
Encourage other people to reduce their energy use	44.3%
Buy fewer products	33.7%
Catch public transport more	33.0%
Eat less meat/no meat	24.0%
Vote for a green-friendly candidate in an election	21.5%
Offset your carbon emissions (e.g. through a tree-planting scheme)	21.4%
Encourage your workplace to make changes to reduce energy use	20.9%
Take fewer airline flights	19.4%
Take part in community activities	18.5%
Install solar panels/solar hot water on your roof	17.6%
Contact a politician	7.6%
Other	2.7%
None of these	11.6%

Base = 1,000

Of the 16 options presented to respondents, the average number of actions taken in the last 12 months was 4.8 while the average number of actions planned for the next 12 months was 4.9. Women reported having taken more action than men, and also planned to do more. People between 18 and 34 reported taking more action than those over 35 and planned more in the near future. Labor voters reported taking more action, and planned more, than Coalition voters. These findings are set out in Table 4.



Table 4: Average number of climate-friendly actions

	Mean number of actions taken	Mean number of planned actions
Male	4.60	4.90
Female	5.02	5.64
18–34 years	4.91	5.55
35–54 years	4.75	5.15
55+ years	4.80	5.18
Labor voters	5.04	5.48
Coalition voters	4.33	4.51
<b>All</b>	<b>4.81</b>	<b>5.28</b>

Base = 1000

These survey findings suggest that widespread public support for strong action on climate change has translated into some kind of behaviour modification by the great majority of Australians. While some forms of action, turning appliances off at the switch for example, have only a small effect on household energy use, there is nevertheless a great deal of public willingness to engage in cooperative behaviour and to change everyday habits in the interests of the Earth's climate system. The challenge for policymakers is to harness this goodwill into the kinds of individual and collective action that will deliver most benefit.

### 4.3 Expectations of individual action

As Chapter 2 explained, one of the central features of the CPRS is that the economy-wide target (currently proposed to be between a five and 25 per cent reduction on 2000 levels by 2020) will apply regardless of the efforts of individuals, organisations and even state governments to reduce their emissions.

Survey findings suggest that there is widespread misunderstanding of this fact among the Australian public. In answer to the question, *If every household in Australia reduced their electricity use in the future, what effect would you expect this to have on Australia's total greenhouse gas emissions?* more than three in four respondents (78 per cent) said that emissions would go down. Only one in eight (13 per cent) answered correctly, saying that emissions would stay the same. Even most university-educated respondents were mistaken about this aspect of emissions trading, with 77 per cent saying that emissions would go down if every household reduced its future electricity use.

Table 5: Perceptions of the effect of reduced household electricity use

Responses	% of respondents
Australia's total greenhouse gas emissions will go down	77.5%
Australia's total greenhouse gas emissions will stay the same	13.1%
Australia's total greenhouse gas emissions will go up	1.6%
Not sure	7.8%
<b>Total</b>	<b>100%</b>

Base = 1000

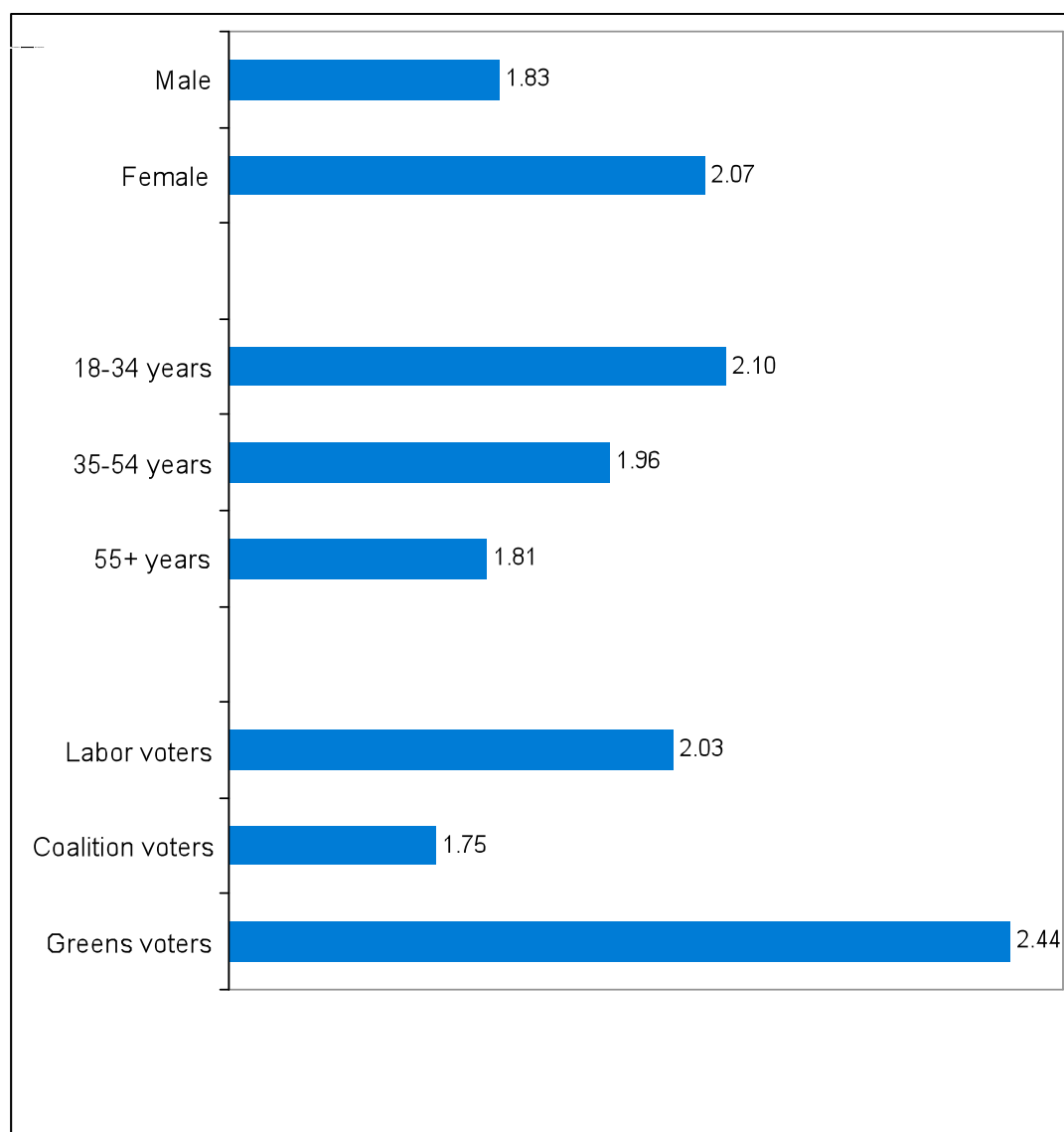
Question: If every household in Australia reduced their electricity use in the future, what effect would you expect this to have on Australia's total greenhouse gas emissions?

Survey findings indicate that most Australians believe that deliberate reductions in household electricity use *should* bring down Australia's overall emissions, despite the unfortunate design features of the CPRS. Eighty-seven per cent of respondents agreed with the statement, *Households and individuals should be able to contribute to reducing Australia's greenhouse gas emissions*, while only nine per cent disagreed.

A clear majority (72 per cent) also agreed that *My actions make a difference to Australia's greenhouse gas emissions*, with 19 per cent disagreeing. There is thus a fair degree of optimism among the Australian public about the efficacy of individual climate-friendly action. Given the changes that the CPRS will bring into effect, it will be interesting to re-examine such attitudes when emissions trading is in place and further international agreements on emissions reductions have been made.

Figure 8 depicts how personally 'empowered' or 'optimistic' different kinds of respondents feel in relation to individual action to address climate change based on their responses to the statement above. It shows that women feel more empowered than men, younger people feel more empowered than older people and Greens voters feel their actions are making more of a difference than Labor voters who, in turn, feel more empowered than Coalition voters.

Figure 8: Personal empowerment regarding climate change (out of 5)



Base=1,000. Numbers presented are mean scores based on respondents' level of agreement or disagreement with the following statement on a scale of 1 to 5: *My actions make a difference to Australia's greenhouse gas emissions.*

## Polluter subsidies

Another prominent feature of the CPRS is the generous assistance that it will extend to big polluting companies, particularly those relying substantially on exports. Survey findings indicate that this aspect of the scheme is at odds with public sentiment. When asked who should take primary responsibility for the economic costs associated with lowering greenhouse gas emissions, most respondents (51 per cent) said that heavy polluting companies and industries should be responsible. A third (34 per cent) said that government should take primary responsibility, while six per cent thought that households and individuals should.

Table 6: Attitudes towards responsibility for economic costs

Sectors	% of respondents
Heavy-polluting companies/industries (e.g. electricity generation, mining, metals)	50.6%
Government	33.8%
Households/individuals	5.8%
Low-polluting companies/industries	1.0%
Farmers	0.5%
None of these	1.5%
Not sure	6.8%
<b>Total</b>	<b>100%</b>

Base=1000

Question: *There will be economic costs associated with lowering greenhouse gas emissions. Who should take primary responsibility for those costs?* (single response)

As these findings suggest, the government's decision to give away up to 95 per cent of carbon permits free of charge to the largest polluters carries the risk of reducing the credibility of the CPRS in the minds of the public. If this occurs, there is a danger that overall levels of intrinsic motivation to act in climate-friendly ways will drop as a result.

#### 4.4 National targets

Survey respondents were asked for their assessment of the Australian Government's target to reduce greenhouse gas emissions by five per cent on 2000 levels by 2020. The majority (53 per cent) regarded the target as too weak, while a quarter thought it was about right. Just five per cent of respondents regarded the target as too strong, while fully 18 per cent of people were unsure.

Table 7: Attitudes towards Australia's five per cent emissions reduction target

	<b>% of respondents</b>
Too weak	52.7%
Too strong	4.6%
About right	25.1%
Not sure	17.6%
<b>Total</b>	<b>100%</b>

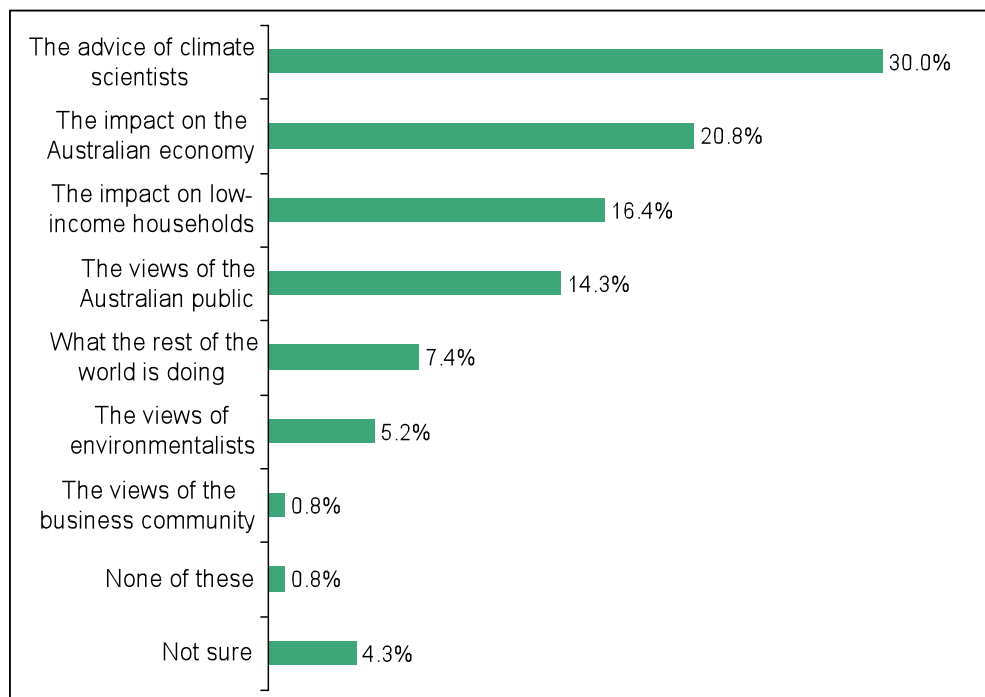
Base = 1000.

Question: *The Australian Government has announced that its Carbon Pollution Reduction Scheme will lower Australia's greenhouse gas emissions by 5% on 2000 levels by 2020. In your opinion, is the Government's 5% target ...?*

Uncertainty about the suitability of the target is entirely understandable given the complexity of both climate science and the policy options. Respondents were therefore asked the following question and given a list of options: *In choosing a greenhouse gas emissions reduction target, which of these should the Australian Government pay most attention to?* They regarded the advice of climate scientists as the most important factor (30 per cent), followed by the impact on the Australian economy (21 per cent) and the impact on low-income households (16 per cent). Notably, less than one per cent of respondents believed that the views of the business community should be the most important factor for government in choosing an emissions reduction target.

While the Rudd Government appears to attach significant weight to the concerns of the biggest polluters, particularly in formulating its emissions reduction target, the Australian public is more than 30 times more likely to be concerned with the views of climate scientists. In addition, less than eight per cent of respondents believe that the efforts of the rest of the world should determine the extent of any action taken by Australia. This implies strong public support for the Australian Government taking steps to reduce greenhouse gas emissions regardless of the progress of international agreements or initiatives by other countries.

Figure 9: Factors which should influence emissions reduction target



Base = 1000.

Question: *In choosing a greenhouse gas emissions reduction target, which of these should the Australian Government pay most attention to? (Single response)*

#### 4.5 Buying permits to rip them up

As Chapter 2 explains, the only way that individuals and households can actually lower Australia's greenhouse gas emissions under the proposed form of the CPRS is to purchase carbon permits and 'rip them up' or otherwise dispose of them. This would remove permits from circulation so that the emissions they represent would become unavailable to polluters.

While the notion of buying carbon permits to rip them up is a peculiar one, survey respondents were nonetheless asked the following question: *If the only way you could reduce greenhouse gas emissions were to buy carbon permits (to prevent others using them), would you consider doing this?* If they answered yes, they were then asked, *How much money would you be prepared to pay per week for carbon permits, if this would guarantee a reduction in Australia's greenhouse gas emissions?*

Around a quarter of the survey sample (25 per cent) said that they would consider buying carbon permits while a similar proportion (25 per cent) said they would not. Reflecting the strangeness of the idea, fully half of all respondents (51 per cent) were uncertain as to whether they would consider buying carbon permits or not.

Of those respondents who said they would consider buying carbon permits, just under half (45 per cent) nominated a price that they would be prepared to pay. The mean price was \$21.13 a week (\$1,098.76 a year), while the median price was \$10 a week (\$520 a year). This also varied with income; the average price nominated by respondents in households with an income below \$60,000 a year was \$17.05 (\$886.60 a year), compared with \$24.61 (\$1,279.72 a year) for those in households with incomes over \$60,000 a year.

While it is true that under the CPRS it will be possible for individuals to 'retire permits', it is important to understand how inefficient and demotivating this approach would be.

In addition to forcing people to 'donate' their low-cost household abatement to the polluters and then 'buy it back' in the form of permits, this process creates a disconnect between individual action and emissions reduction. Changing behaviour is personal, whereas buying a permit is abstract. The level of intrinsic motivation in the community is therefore likely to fall if permit buybacks are the only way to translate voluntary action into emissions reduction. As the Senate Standing Committee on Economics concluded:

The Committee supports the ability of concerned citizens to buy and cancel permits but do not believe that on its own this mechanism provides a sufficient outlet for voluntary action ... The Committee therefore believes that introducing some measures to continue encouraging voluntary action is a worthwhile initiative.<sup>70</sup>

In May 2009, the government announced a number of changes to the CPRS, including the establishment of a 'carbon trust', which would allow individuals to 'pledge' the value of their household energy savings in order to retire additional permits. While an improvement on the previous position, the creation of a 'pledge fund' is still deeply flawed. These recent changes are discussed in more detail in Appendix A.

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<sup>70</sup> Senate Standing Committee on Economics, p. 73.

## 5. Cap and slice: the best of both worlds

### 5.1 The end of voluntary action?

Since Australia signed the Rio Declaration in 1992,<sup>71</sup> Australian governments at all levels have relied almost exclusively on voluntary measures to reduce greenhouse gas emissions. These measures range from information campaigns designed to change individual behaviour to the introduction of programs such as the Greenhouse Challenge.<sup>72</sup> The electricity industry has promoted GreenPower at a price premium over dirty power and car companies are selling an increasing number of expensive 'climate-friendly' cars such as the Toyota Prius.

While the *exclusive* reliance on voluntary measures to reduce greenhouse gas emissions in Australia has been criticised,<sup>73,74</sup> the willingness of individuals to change their everyday behaviour has helped to constrain the growth in demand for greenhouse-intensive forms of energy. Under the right policy settings, such efforts as these can *augment* any abatement achieved through mandated initiatives like emissions trading.

The Rudd Government has, however, proposed a scheme that will sever the link between individual action and the level of emissions. The CPRS will negate the role that voluntary action has played in emissions abatement to date, replacing it with a completely legislative approach in which Australia's emissions are fixed at a point in time. Under the new system, any increase in efforts by one party to reduce emissions only frees up additional pollution permits for other parties to use.

Supporters of the proposed CPRS argue that the number of permits will decline over time, but the lack of a causal mechanism linking voluntary action to the rate of decline of future emissions will continue to present a problem. Under the proposed scheme, the number of pollution permits will decline whether voluntary action is undertaken or not. Further, Minister

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<sup>71</sup> United Nations, Report of the United Nations Conference on Environment and Development, Rio Declaration on Environment and Development, Rio de Janeiro, 14 June 1992.  
<<http://www.unep.org/Documents.Multilingual/Default.asp?documentID=78&articleID=1163>>

<sup>72</sup> The Greenhouse Challenge, launched in 1995, is a joint voluntary initiative between the Australian Government and industry to abate greenhouse gas emissions. Participating organisations sign agreements with the government that provide a framework for undertaking and reporting on actions to abate emissions.

<sup>73</sup> R Denniss, *Paying to protect the environment: Any Volunteers?* PSRC Research Paper No. 50, UNSW, Sydney, 1998.

<sup>74</sup> R Denniss, *Taxing Concern? The Performance of the Greenpower Scheme in Australia*, Discussion Paper No. 31, The Australia Institute, 2000.



Wong has made it clear that the level of emissions in 2020 will be exactly the same, regardless of the efforts of individuals, communities or even state governments:

JOURNALIST: If we get one per cent reduction, through voluntary household action, does that mean the scheme, the cap can raise one per cent above that?

WONG: The target range remains the same—five to 15—that is the decision of the Government. People have different views about that but that is the decision that was announced in the context of the White Paper. What I have said though is the caps within that range—for the five years and ahead—can take into account the past and likely future voluntary action.<sup>75</sup>

The following section outlines how a cap-and-trade approach, such as the CPRS, can be converted into a 'cap-and-slice' scheme. Under this arrangement, the more voluntary action that takes place, the lower will be the level of emissions. Such a scheme would provide the certainty of a regulatory system without either destroying the intrinsic motivation of individuals to restrain their energy use or preventing downward flexibility in the level of emissions.

## 5.2 The downside of certainty

Policies such as the CPRS are often referred to as 'cap-and-trade' schemes because they set a cap on the maximum level of pollution that can be released. Within that level, polluters are free to trade surplus permits among themselves.

While cap-and-trade schemes do not have a strong track record in practice, it is often argued that they are the optimal policy instrument for tackling pollution due to their capacity to deliver 'least-cost abatement'. Least-cost abatement refers to the theoretical achievement of a given level of pollution reduction (abatement) at the lowest possible economic cost. The reason that trading schemes are, in theory at least, more capable of achieving lower-cost abatement than carbon taxes or other approaches is that polluters have a financial incentive to decide among themselves who will benefit most from continuing to pollute and, via trade, to direct pollution permits towards those emitters.

One of the biggest advantages of a cap-and-trade scheme is that it provides certainty about the level of pollution that will be generated in a

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<sup>75</sup> P Wong, 'Release of the Carbon Pollution Reduction Scheme Exposure Draft Legislation', transcript of press conference, Parliament House, 10 March 2009. <<http://www.environment.gov.au/minister/wong/2009/pubs/tr20090310.pdf>> accessed 14 July 2009.

given period. If the target is set at one million tonnes of carbon dioxide and one million permits for one tonne each are issued, there is reasonable certainty that one million tonnes will be emitted (at least in those sectors covered by the scheme). However, this certainty can also be one of the biggest weaknesses of a cap-and-trade scheme. If the target is inconsistent with the required levels suggested by the scientific evidence, revising it becomes virtually impossible without a large-scale permit buyback, presumably funded by taxpayers. Much of the support for the CPRS was based on the assumption that it would deliver targets based on science; unfortunately many advocates did not consider fully the consequences of an emissions trading scheme linked to the 'wrong' target. Because a situation like this will lock in the level of pollution for more than a decade, *we can be certain that the CPRS will not deliver the right level of emissions reduction linked to its currently mooted target.*

In a traditional cap-and-trade scheme, the target functions both as a cap above which emissions cannot rise, and a floor below which emissions cannot fall. While some have argued that this feature of emissions trading is so well-known that it does not warrant discussion,<sup>76</sup> the survey results presented in Chapter 4 indicate that it is not widely understood outside the economics profession. Indeed, leading economic commentators have conceded that it was not known to them.<sup>77, 78</sup> Prime Minister Rudd himself has claimed that spending \$4 billion on insulation for households will reduce emissions by 50 million tonnes, suggesting that even he does not understand this 'design feature'.

For policymakers, there are two main problems associated with this feature of emissions trading. First, it weakens the intrinsic (non-price) motivation for individuals to reduce their emissions. Second, it involves setting rigid targets many years in advance, even as the scientific evidence on which those targets are based is changing rapidly.

The problem of incorporating voluntary action into emissions trading schemes is not confined to Australia. In early 2009, the German public was for the first time made aware that the billions of euros spent on investment in wind and solar energy in Germany, along with the benefits of the German feed-in-tariff, were actually freeing up pollution permits that

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<sup>76</sup> L Taylor, 'Killing ETS won't produce better one', *The Australian*, 21 February 2009.

<sup>77</sup> R Gittins, 'Emission Impossible: The sad truth', *The Sydney Morning Herald*, 25 February 2009.

<sup>78</sup> The authors also readily concede that they had not considered the full consequences of this 'design feature' until the second half of 2008.

enabled steel-making plants in Eastern Europe to increase their emissions.<sup>79</sup>

### 5.3 Undermining intrinsic motivation

As argued in chapters 2 and 3, consumption behaviour is motivated by a range of factors, including price, community norms, a desire to behave 'well' and sanctions. People may act in their own selfish (or 'rational') interests in some spheres of their lives (for example, when deciding what brand of coffee to buy) while simultaneously acting selflessly (or 'irrationally') in other spheres of their lives (for example, by donating money to charity).

The relative significance of price and non-price factors is open to debate but it is arguably more useful for policy purposes to assume that both mechanisms can exist simultaneously. This raises an important question about the effect of price mechanisms on non-price motivation. Economists typically consider the impact of a change in price in isolation from changes to underlying tastes, preferences and motivations. Although this approach makes analysis easier, it explicitly ignores the need to consider the linkage between a change in price and a change in inherent motivation.

Several studies have shown that introducing price considerations where none previously existed can have a significant impact on underlying motivations. For example, when blood collection shifted from a voluntary to a payment-based system in the US, a reduction in the amount of blood supplied by those who had previously donated was observed.<sup>80</sup> Similarly, organisations that rely on voluntary labour have experienced unexpected results when they have tried to remunerate their 'volunteers'. While some people seem to appreciate the attempt to recognise their contribution, others withdraw their services because they 'don't need the money'.<sup>81</sup>

The point for policymakers is that different people are motivated by different things. The CPRS seeks to replace the existing stock of inherent motivation to reduce emissions with a new, price-based mechanism. By doing so, however, it will create a situation in which the greater the motivation of households and individuals to reduce emissions, the smaller will be the abatement effort required from big polluters.

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<sup>79</sup> A Waldermann, 'Wind Turbines in Europe Do Nothing for Emissions-Reduction Goals', *Der Spiegel*, 10th February 2009. <<http://www.spiegel.de/international/business/0,1518,606763,00.html>> accessed 14 July 2009.

<sup>80</sup> Titmuss.

<sup>81</sup> Gneezy and Rustichini.

Such an approach is sometimes justified on the grounds that inherent motivation is an insufficient response and that the CPRS is able to achieve more than well-meaning individuals can.<sup>82</sup> However, a more effective approach would be to design a scheme that not only imposes responsibilities on all citizens but also provides an incentive for the inherent motivation of that (growing) proportion of the community that is willing to go even further to lower emissions.

### **5.5 The solution: cap-and-slice**

Under the CPRS, the number of permits issued each year is fixed five years in advance, an interval known as the 'certainty period' and designed explicitly to provide certainty to large polluters. According to the White Paper and the draft legislation, the Climate Change Minister has some discretion in setting the five-year target but is heavily constrained by the fact that emissions reductions in the year 2020 are mandated at between five and 25 per cent. Thus, no matter how hard individuals, communities, state governments or even the Australian Government try to reduce emissions, they will be unable to achieve a reduction of more than 25 per cent by 2020. This fact is of obvious concern to those who believe that emissions reductions should be based on the scientific consensus reached by the Intergovernmental Panel on Climate Change (IPCC).

There is an alternative approach that would provide such 'additionality' while still remaining completely consistent with emissions trading. Under a 'cap-and-slice' approach, the amount of emissions saved as a result of voluntary action would be measured and the number of permits issued in the subsequent year reduced accordingly. In this context, *voluntary action* would be defined as any abatement that is not motivated by rational, self-interested responses to a carbon price and would therefore include such actions as:

- paying a price premium to purchase GreenPower
- installing photovoltaic solar panels
- changing behaviour patterns to reduce energy use
- local government planning legislation designed to reduce energy use through improved housing design

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<sup>82</sup> P Wong, 'ETS is better than tax', *The Australian*, 23 February 2009.

- state government action to invest in public transport, introduce feed-in tariffs, build large-scale solar farms, change land use regulations or set state emissions targets
- any federal government action beyond the CPRS, including:
  - the homeowner and renter insulation programs, which allocate \$4 billion for subsidies on the installation of ceiling insulation
  - the Mandatory Renewable Energy Target, which obliges electricity suppliers to source a given amount of energy from renewable sources.

### **How would the level of voluntary action be measured?**

If the number of permits is to be reduced in line with the level of voluntary action, it will be necessary to measure accurately the savings achieved through voluntary versus price-based behaviour change. This could be done in a number of different ways, including the issuing of tradeable emissions reduction permits for certified reductions or an estimation of emissions reductions based on the amount of investment in voluntary abatement. Given the current design features of the proposed CPRS, however, the simplest and most effective approach would be to use the forecast levels of emissions from the household and commercial property sector as a 'baseline' against which emission reductions from voluntary activity can be measured.

Treasury has projected the likely level of emissions that would be released in the absence of the CPRS, a forecast known as the business as usual (BAU) scenario. It has also estimated the probable impact on emissions of the price signal that will flow from the introduction of the CPRS. Based on this modelling, it is possible to distinguish at the national level between the volume of emissions reduction that is attributable to the price effect of the CPRS and, by elimination, any additional emissions reductions resulting from voluntary action.

Such an approach would not provide detailed feedback for individuals because the tonnes of emissions saved by them would not be separately recorded but it would provide a high degree of certainty about the accuracy of the measure. Thus, households could be reassured that a

direct relationship existed between their voluntary efforts and the amount of emissions *at a national level*.<sup>83</sup>

However, households and individuals (and even businesses) also need direct feedback about their efforts if voluntary action is to be maximized. One way to do this would be for more comprehensive information to be included on electricity and gas bills. For example, a household could be provided with information to facilitate comparison between their current emissions, their past emissions, their neighbours' emissions and average emissions across the community (for an equivalent house size). This would encourage truly community-based energy-reducing initiatives to emerge without creating a significant administrative or compliance burden.

### **How would a cap-and-slice scheme affect the permit price?**

One of the most unexpected features of a cap-and-slice scheme is that reducing the number of permits each year in line with voluntary efforts would not lead to any increase in the price. If the reduction in the number of permits is equal to the reduction in the demand for permits due to voluntary action, there should in fact be no impact on the price at all.

Under the CPRS as currently proposed, voluntary action would result in a reduction in the price of permits for big polluters, amounting in effect to a transfer of wealth from the household sector to the biggest emitters. But under a cap-and-slice system, heavy polluters could no longer expect to receive this windfall. Therefore, it could be argued that a cap-and-slice scheme imposes costs on polluters by denying them the 'benefits' of the price reductions that flow from voluntary action. Such an argument, however, is based on the notion that individuals, communities and state governments have an obligation to make 'irrational' investments in uneconomic abatement measures in order to reduce the effort required by large polluters.

While the Rudd Government has been guarded about its reasons for resisting the cap-and-slice approach, there is some evidence that these are based on the 'cost' to polluters of having to forgo the permit price reductions associated with voluntary action. For example, during the

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<sup>83</sup> Various alternative mechanisms have been proposed. See Denniss, *Fixing the floor*, and Senate Standing Committee on Economics, *Carbon Pollution Reduction Scheme Bill 2009 and related bills*, 15 June 2009.  
<[http://www.aph.gov.au/senate/committee/economics\\_ctte/cprs\\_2\\_09/report/index.htm](http://www.aph.gov.au/senate/committee/economics_ctte/cprs_2_09/report/index.htm)> accessed 14 July 2009.

course of the Senate Standing Committee on Economics inquiry into the legislation to implement the CPRS, Labor Senator Louise Pratt stated that:

...in order for ... us as a nation to be able to reduce emissions overall, we will very much be relying on individual and voluntary actions and the kinds of contributions like, for example, the insulation scheme. Yes, I understand that we have a cap there, but, in terms of the overall efficiency in reaching the overall goal, ultimately it is about everybody across the whole of the Australian community having to pull their weight.<sup>84</sup>

One of the assumptions behind the CPRS is that people respond to price signals in logical and predictable ways. Conversely, the assumption behind 'voluntary' measures is that additional abatement can be achieved by encouraging households and individuals to make discretionary energy savings rather than relying on price alone. While these assumptions are clearly at odds, it is possible to design emissions reduction mechanisms that harness the power of both the 'rational' and the 'irrational' dimensions of human behaviour. Further, it is contradictory to suggest that the efficient operation of a market-based mechanism is underpinned by the expectation that altruistically-minded individuals will continue to act 'irrationally'. If the Rudd Government is genuinely unconcerned about the role of voluntary action, it should simply explain the operation of the CPRS clearly. This will ensure that government messages do not mislead individuals or communities into undertaking activities that will deliver no additional reduction in overall greenhouse gas emissions.

## 5.5 Conclusion

Tackling climate change will require fundamental shifts in the way that energy is produced. It will also require fundamental shifts in the way that people live their lives, at least in developed countries. New technologies such as renewable energy or hybrid cars can significantly reduce the level of greenhouse gases associated with particular patterns of activity. Yet simple changes in those same patterns of activity can reduce emissions more quickly and at lower cost.

This distinction between the level of emissions associated with an activity and the pursuit of the activity itself lies at the heart of the disconnect between the analysis of economists (as described in Chapter 2) and that

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<sup>84</sup> Australia, Senate, Standing Committee on Economics, *Reference: Exposure drafts of the legislation to implement the Carbon Pollution Reduction Scheme*, Wednesday 25 March 2009, Canberra, Hansard, p. 80. (Senator Louise Pratt).  
<<http://www.aph.gov.au/hansard/senate/commtee/S11891.pdf>>

of behavioural scientists (described in Chapter 3). Economic approaches typically manipulate the price of a good in order to change demand while holding all other factors constant. Behavioural approaches, by contrast, are predicated on the need to modify factors other than price.

In order to reduce greenhouse gas emissions rapidly, it will be necessary to encourage both drivers of change. Price signals should be used to ensure that consumers and producers modify their behaviour such that the environmental costs of their choices are explicitly accounted for in financial terms. But it is also necessary to modify behaviour, preferences and social norms in such a way that they lead to a transformation of the underlying patterns of consumption. Price-based policies might provide powerful incentives for people to buy more fuel-efficient cars or refrigerators, but a behavioural framework delivers important insights into how people can be encouraged to change their outlook and their day-to-day habits. This might involve living closer to work, walking to the local shops or purchasing more fresh rather than processed food. It might also involve buying *fewer goods and services*, particularly those that contribute most to climate change. Given that the pursuit of economic growth provides the rationale for much government and commercial activity, this will be difficult for policymakers to reconcile as the era of climate change unfolds.

While most people would probably agree that it is desirable to pursue ‘the best of both worlds’ by relying on both price *and* behavioural changes to deliver emissions reductions, the design of the CPRS actually prevents us realising the benefits of both approaches simultaneously. If voluntary action does not lead to lower net emissions, there will be less inherent motivation to undertake behavioural change. Some economists will no doubt argue that such well-meaning behaviour is not required under an emissions trading scheme. They might contend, for instance, that if the emissions target is set at a level consistent with preventing dangerous climate change, the ‘motivation’ for emissions reduction is irrelevant. Such an argument is flawed for several reasons.

First, the gap between Australia’s emissions reduction targets and the scientific evidence regarding the level of reduction required is so large that the ‘quantitative certainty’, usually seen as an advantage of emissions trading, becomes a fundamental weakness. By setting such weak targets, the government is locking Australia into failure.

Second, there is no published evidence to support the claim that the CPRS will deliver lower-cost emissions abatement than is achieved by the kind of behavioural change already being undertaken by millions of



Australians. For example, encouraging people to ride rather than drive to the local shops is one of the lowest-cost means of greenhouse gas abatement available. Indeed, the 'costs' are likely to be negative in that people save petrol, reduce congestion, improve their health and feel good about their efforts to do something for the planet. But if 'doing one's bit' in this way is a significant factor for a low-carbon economy, policies should be designed to accommodate such savings rather than transferring them to another sector of the economy.

Third, consumers are not nearly as 'rational' in their decision-making as economists appear to suggest. The correlation between increases in electricity prices and reduction in consumer demand is weak,<sup>85</sup> yet price-based initiatives like the CPRS are based on rational consumer responses to changes in price. In the real world, many people, perhaps even a majority, do not respond 'rationally' to price signals in this way. The evidence presented in Chapter 3 suggests that non-price motivators can be highly effective at little or no cost.

Finally, the idea that individual efforts to achieve a community goal should be offset by reduced efforts on the part of others is inconsistent with the framework that underpins other areas of policy. Individuals motivated by a desire to 'do their bit' donate billions of dollars to charity each year. It is inconceivable that a government would introduce legislation that, while encouraging individuals to continue to contribute to charity, withdraws one dollar of funding for every dollar donated. On the contrary, governments sometimes promote matching grants where they promise to *match* amounts equivalent to those already donated. Such an approach serves to motivate individuals in exactly the opposite way to the proposed CPRS.

For more than 15 years, the Australian Government has largely been idle in its response to climate change. In its place, individuals, communities, even local and state governments have stepped in to 'do their bit'. While it is admirable that the current government is now seeking to enter the policy arena in a substantial way, it is unfortunately planning to replace, rather than supplement, the efforts of others. Unless the CPRS is modified to ensure that the actions of individuals, communities and state and local governments can reduce emissions below the Australian Government's

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<sup>85</sup> The relationship between electricity prices and household investment in energy efficiency is so weak that the Rudd Government recently committed to spending \$4 billion to encourage the installation of insulation in Australian homes. But if individuals were 'rational', they would already have installed such insulation since it saves money over the long term. While the insulation program could not reduce net emissions under the proposed CPRS, if the scheme were means-tested it could have resulted in significant benefits for low-income earners and renters in the form of lower electricity bills.

mandated target of five to 25 per cent, it will not only risk destroying the motivation of people to 'do their bit extra', but will also lock Australia into a level of emissions that is inconsistent with preventing dangerous climate change.

At this critical time, the Australian Government has a chance to improve the CPRS by adopting the cap-and-slice approach. In December 2009, the UN Climate Change Conference in Copenhagen will provide Australia with a unique opportunity to ensure that national and international targets only set a ceiling above which emissions cannot rise—not a floor below which they cannot fall.

## **Appendix A: The Rudd Government's position on voluntary action**

The Rudd Government has been slow and somewhat confused in its response to calls to ensure that voluntary action taken by individuals and communities delivers additional reductions to those specified by the national emissions targets under the CPRS. Similarly, some state and local governments continue to demonstrate a complete lack of understanding of the fact that, under the proposed CPRS, any efforts to reduce emissions in one jurisdiction will simply free up additional pollution permits for use in other jurisdictions.

This appendix begins by outlining the changes in public statements made by the Rudd Government since The Australia Institute began to publicise the problems associated with voluntary action under the CPRS in November 2008. It then provides a brief overview and critique of the current policy approach to the issue.

### **Reluctant acceptance**

The first response by the Rudd Government to the observation that voluntary action to reduce emissions would be rendered pointless by the CPRS was to obfuscate. The Climate Change Minister, Penny Wong, stated repeatedly that the voluntary efforts of individuals would not be meaningless under her scheme:

There has also been misunderstanding of the impact voluntary action by households can have under a cap-and-trade scheme. Some argue that household action simply frees up carbon pollution permits for others to use.

In fact, individual and community action to be more energy efficient not only saves them money, it will contribute directly to Australia meeting our emissions reductions targets. Strong household action also helps make it easier for governments to set even more ambitious targets in the future.<sup>86</sup>

It is important to note how the second paragraph above does not actually take up the point raised in the first paragraph. That is, having identified that 'some argue that household action simply frees up carbon permits for others to use', the Climate Change Minister does not then counter that argument. Instead, she proceeds to list a range of unrelated benefits associated with individual action. She concludes with the assertion that if individuals work hard to reduce emissions, a future Climate Change

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<sup>86</sup> Wong, 'ETS is better than tax'.

Minister in another government perhaps, might see fit to set more ambitious emissions reduction targets after 2020.

In the same article, the Climate Change Minister goes on to ask herself the question:

Why else would the Government provide \$3.9 billion of new investment to insulate homes and install solar hot water if we didn't value the contribution households can make?

The unfortunate answer to this question is that the more taxpayers' money the government spends helping households to reduce emissions, the less effort big polluters will have to make to achieve the timid national targets that have been set by the Rudd Government.

The next element in the government's attempt to confuse people into supporting the CPRS was based on conflating medium-term emissions targets with the 2020 emissions reduction target. Under the proposed CPRS, medium-term targets will be announced each year by the Minister for five years hence, while the 2020 target will be fixed in order to provide business with 'certainty'.

JOURNALIST: If we get one per cent reduction, through voluntary household action, does that mean the scheme, the cap can raise one per cent above that?

WONG: The target range remains the same—five to 15—that is the decision of the Government. People have different views about that but that is the decision that was announced in the context of the White Paper. What I have said though is the caps within that range—for the five years and ahead—can take into account the past and likely future voluntary action.

## Gradual policy shift

Despite several attempts, the Climate Change Minister was unable to argue convincingly that voluntary action would not be negated under the CPRS, a dilemma that finally resulted in a policy shift on 4 May 2009. In a press release ironically entitled, *Helping all Australians do their bit on climate change*, and without conceding that there had been any 'confusion' in the past, Penny Wong stated:

We have listened to Australian households who have raised concerns that their individual efforts to reduce emissions will not be adequately taken into account under the CPRS.<sup>87</sup>

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<sup>87</sup> P Wong, *Helping all Australians do their bit on climate change*, press release, 4 May 2009.

Unfortunately, while the Minister may have been forced to listen to the concerns of Australian households, it appears that she did not listen to those who were offering comprehensive solutions. Instead, the government has proposed a 'carbon trust', which will allow Australians to 'pledge' their emissions savings and make equivalent payments so that additional permits can be retired. The centrepiece of this initiative will be a website. In the Minister's words, the website:

... will provide a one-stop shop for individuals and households to simply calculate their energy use and buy and retire carbon pollution permits under the Carbon Pollution Reduction Scheme.

Because the Pledge Fund will pool pledges, even small amounts can combine to make a big difference.

Households and individuals will be able to pledge as little or as much as they can afford to reduce carbon pollution.

The Pledge Fund will be entirely voluntary and contributions to the Pledge Fund will be tax deductible.<sup>88</sup>

This initiative will do nothing to solve the underlying problem in the design of the CPRS. Indeed, rather than encouraging voluntary action, the adoption of such an approach will actually oblige individuals seeking to reduce emissions to pay twice. This is because altruistically-motivated individuals will incur both upfront costs (either by purchasing more expensive, energy-efficient products or by changing their behaviour) *and* the costs of pledging their emissions savings.

Such a scheme is so clumsy and inequitable that it is unlikely ever to be used. Moreover, at the same time that this announcement was made, the government also declared that it would increase the number of free permits that it plans to give to polluters—even while asking altruistic individuals to donate money so that permits can be repurchased.

Despite the fact that the Rudd Government's own Senate inquiry into the CPRS concluded that the way in which the proposed legislation negates voluntary action 'must be addressed', the Climate Change Minister continues to deny that this is the case. For example:

A spokesperson for federal Climate Change Minister Penny Wong said Dr Denniss was 'wrong'. 'Everything Australians do, whether in Adelaide, Perth or

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<sup>88</sup> Wong, *Helping all Australians do their bit on climate change*.

Mt Isa, will help us reach our targets for reducing carbon pollution,' the spokesperson said.<sup>89</sup>

Rather than admitting that any additional action by the household sector simply means less is required on the part of the big polluters, the Minister's spokesperson focuses on the capacity of individuals to 'help us reach our targets'. This appears to be a deliberate misrepresentation of the very nature of a cap-and-trade scheme.

## **Conclusion**

The Rudd Government has demonstrated great reluctance in reconciling the role of altruistic behaviour with the use of market-based mechanisms such as the CPRS. It would appear that this reluctance is based on a false belief that responses to climate change must be based on either price or altruism—not on both simultaneously.

As argued in the main body of this paper, a better approach would be to develop a regime in which price and non-price motivations reinforce each other rather than substitute for each other. By ensuring that the pursuit of binding national targets does not negate the genuine desire of individuals to 'do their bit extra', this approach would appear to represent both good policy and good politics.

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<sup>89</sup> C Peddie, 'Emissions trading "props up polluters"', *AdelaideNow*, 9 July 2009.

## **Appendix B: Survey methodology**

### **Methodology**

An online survey of 1,000 respondents was conducted between 21 and 28 January 2009. The sample was representative of the adult Australian population by age, gender and state and territory.

Respondents were sourced from the online panel provider, Valued Opinions Panel, which is owned and managed by the Australian arm of Research Now. This panel is not used to carry out any non-research activities (such as marketing), and panelists are recruited from a wide variety of sources to avoid any bias associated with limited-source recruitment. Panel members are individually rewarded for their participation in a survey at rates that help to ensure reliable levels of response and considered answers to the questions but are not so high as to attract 'professional' respondents.

The survey questions are reproduced below. In addition to these questions, a number of demographic questions were asked.

### **Survey questionnaire**

Q1. In the last 12 months, have you done any of the following because you wanted to reduce greenhouse gas emissions? Please select all that apply.

- Driven less
- Taken fewer airline flights
- Caught public transport more
- Installed energy-efficient light bulbs at home
- Taken shorter showers/fewer showers
- Installed solar panels/solar hot water on your roof
- Turned appliances off at the switch
- Eaten less meat/no meat
- Offset your carbon emissions (e.g. through a tree-planting scheme)
- Encouraged other people to reduce their energy use
- Encouraged your workplace to make changes to reduce energy use

- Bought green-friendly products
- Bought fewer products
- Voted for a climate-friendly candidate in an election
- Contacted a politician
- Taken part in community activities
- None of these
- Other (please specify)

Q2. In the next 12 months, do you plan to do any of the following in order to reduce greenhouse gas emissions? Please select all that apply.

- Drive less
- Take fewer airline flights
- Catch public transport more
- Install energy-efficient light bulbs at home
- Take shorter showers/fewer showers
- Install solar panels/solar hot water on your roof
- Turn appliances off at the switch
- Eat less meat/no meat
- Offset your carbon emissions (e.g. through a tree-planting scheme)
- Encourage other people to reduce their energy use
- Encourage your workplace to make changes to reduce energy use
- Buy green-friendly products
- Buy fewer products
- Vote for a green-friendly candidate in an election
- Contact a politician
- Take part in community activities
- None of these
- Other (please specify)



Q3. If every household in Australia reduced their electricity use in the future, what effect would you expect this to have on Australia's total greenhouse gas emissions?

- Australia's total greenhouse gas emissions will go down
- Australia's total greenhouse gas emissions will stay the same
- Australia's total greenhouse gas emissions will go up
- Not sure

Q4. Do you think Australia should take deliberate action to lower greenhouse gas emissions?

- Yes
- No
- Not sure

Q5. There will be economic costs associated with lowering greenhouse gas emissions. Who should take primary responsibility for those costs? Please select one option.

- Heavy-polluting companies/industries (e.g. electricity generation, mining, metals)
- Low-polluting companies/industries
- Households/individuals
- Government
- Farmers
- None of these
- Not sure

Q6. The Australian Government has announced that its Carbon Pollution Reduction Scheme will lower Australia's greenhouse gas emissions by 5% on 2000 levels by 2020. In your opinion, is the Government's 5% target ...?

- Too weak
- Too strong

- About right
- Not sure

Q7. In choosing a greenhouse gas emissions reduction target, which of these factors should the Australian Government pay attention to? Please select all that apply.

- The advice of climate scientists
- The views of the business community
- The views of environmentalists
- The views of the Australian public
- The impact on the Australian economy
- What the rest of the world is doing
- The impact on low-income households
- None of these
- Not sure

Q8. In choosing a greenhouse gas emissions reduction target, which of these should the Australian Government pay most attention to? Please select one option. [include only answers from Q7].

- The advice of climate scientists
- The views of the business community
- The views of environmentalists
- The views of the Australian public
- The impact on the Australian economy
- What the rest of the world is doing
- The impact on low-income households

Q9. If the only way you could reduce greenhouse gas emissions were to buy carbon permits (to prevent others using them), would you consider doing this?

- Yes

- No – skip to Q11
- Not sure – skip to Q11

Q10. How much money would you be prepared to pay per week for carbon permits, if this would guarantee a reduction in Australia's greenhouse gas emissions?

[dollar amount]

Q11. Do you expect coastal communities in Australia to be affected by sea level rises over the next 50 years?

- Yes
- No
- Not sure

Q12. Please indicate whether you agree or disagree with the following statements [4-point scale: strongly agree/tend to agree/tend to disagree/strongly disagree]

- Climate change is a threat to Australia
- Climate change is a threat to the world
- Climate change has already affected Australia
- Climate change has changed the way I think
- Climate change has changed the way I behave
- Climate change has changed the way I vote

Q13. Please indicate whether you agree or disagree with the following statements [4-point scale: strongly agree/tend to agree/tend to disagree/strongly disagree]

- As big users of energy, Australians have a greater responsibility to reduce greenhouse gas emissions than people in other countries
- As a rich country, Australia has a greater responsibility to reduce greenhouse gas emissions than poorer countries

- Households and individuals should be able to contribute to reducing Australia's greenhouse gas emissions
- My actions make a difference to Australia's greenhouse gas emissions

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